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JUNE 1956

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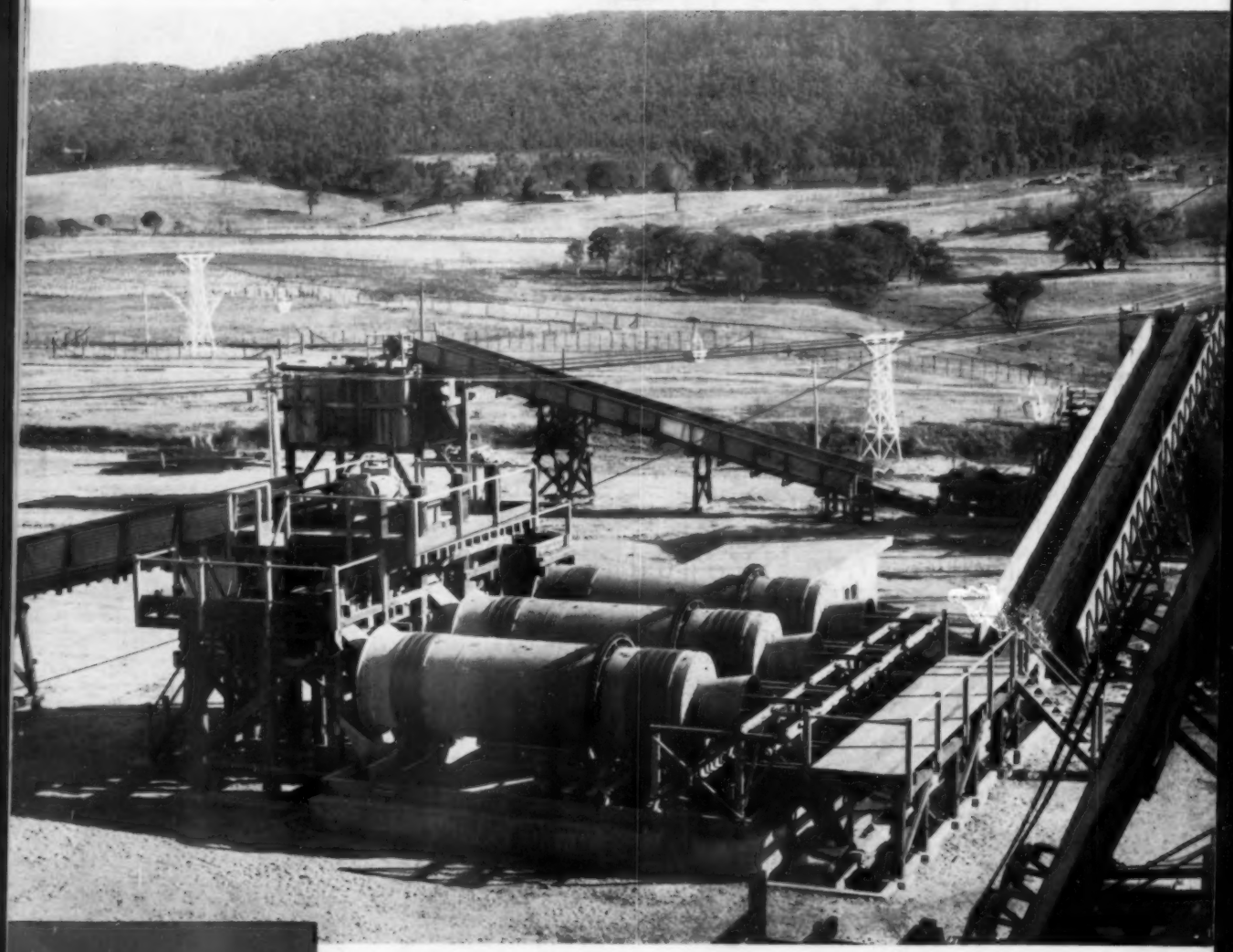

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McCann's Island Aggregate Processing Plant Near Sydney, Australia, Showing Scrubbers and Aerial Ropeway. (See Page 90.)

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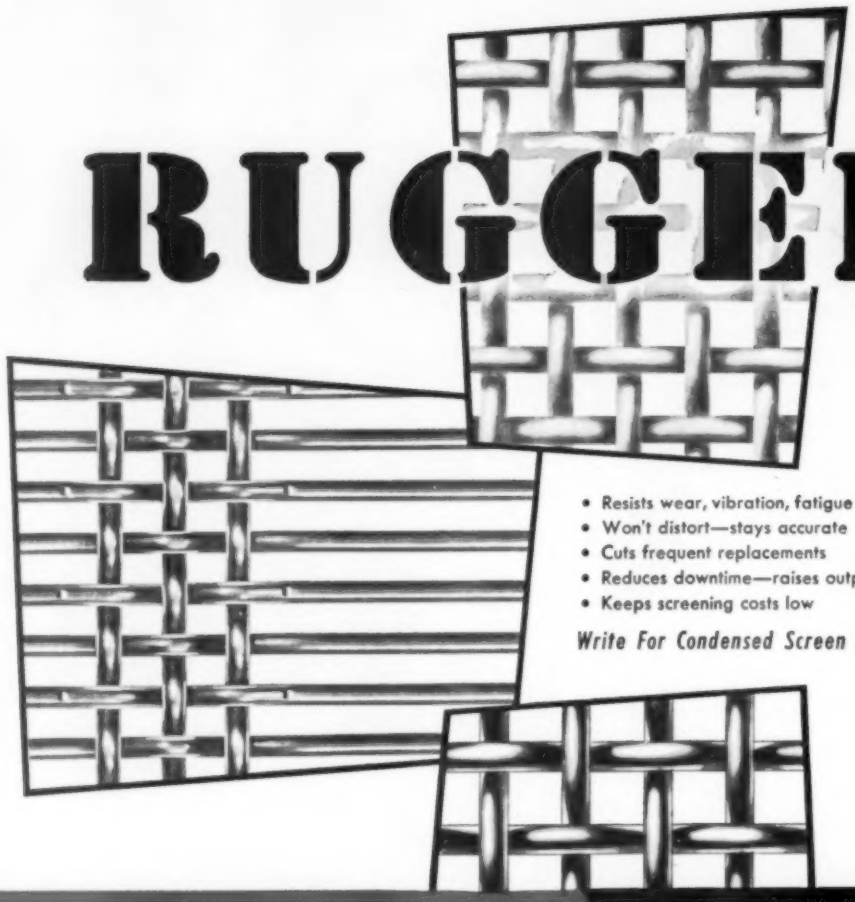

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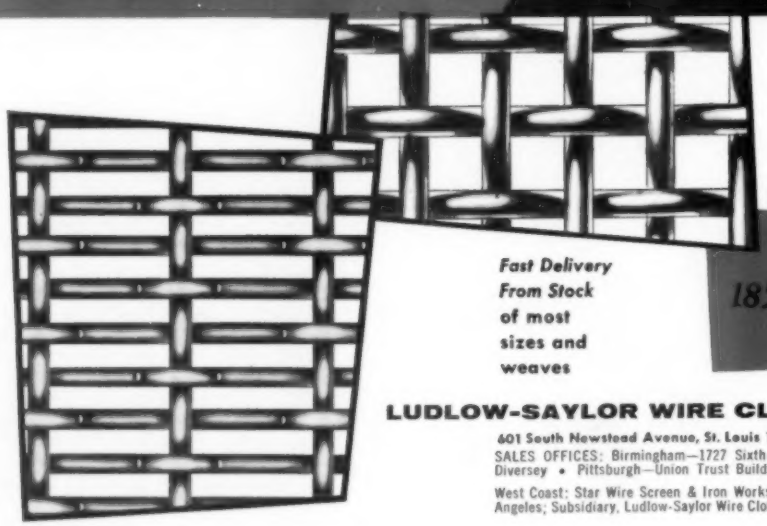

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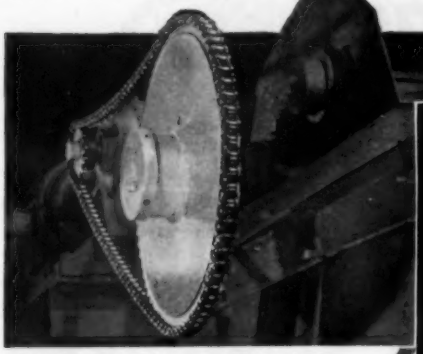

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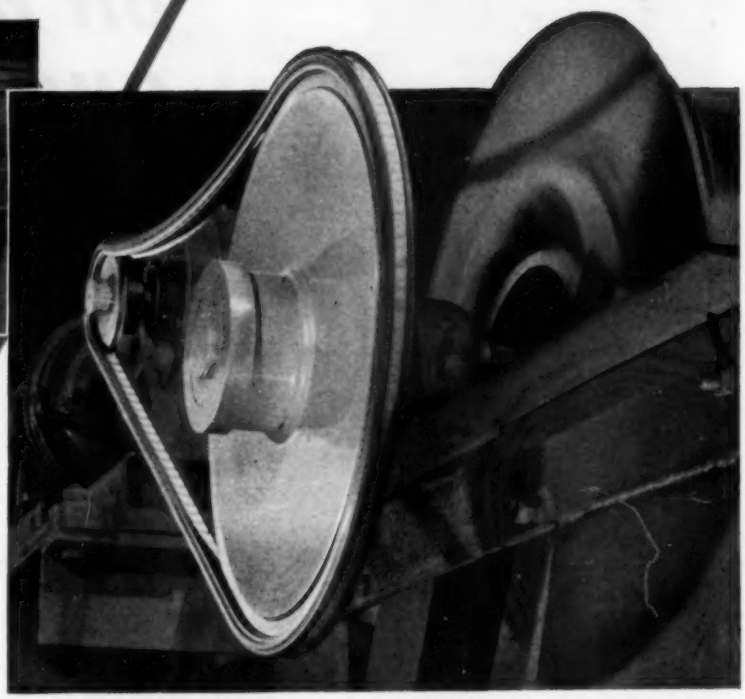

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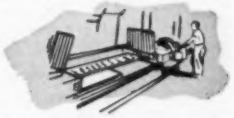

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# pit and quarry

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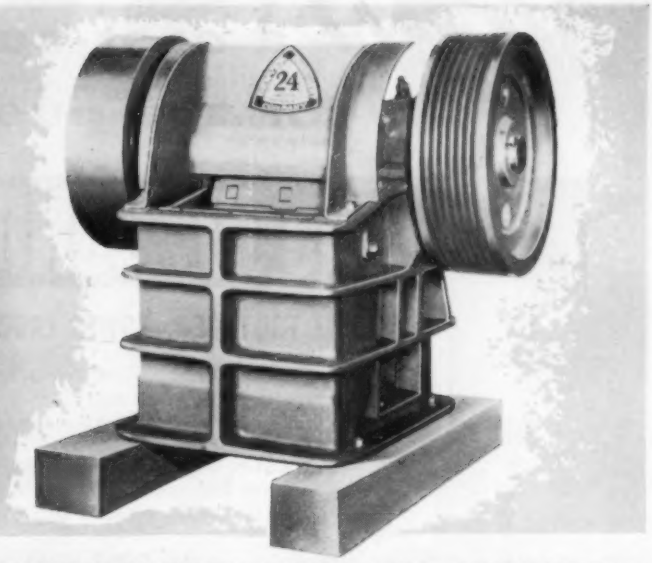

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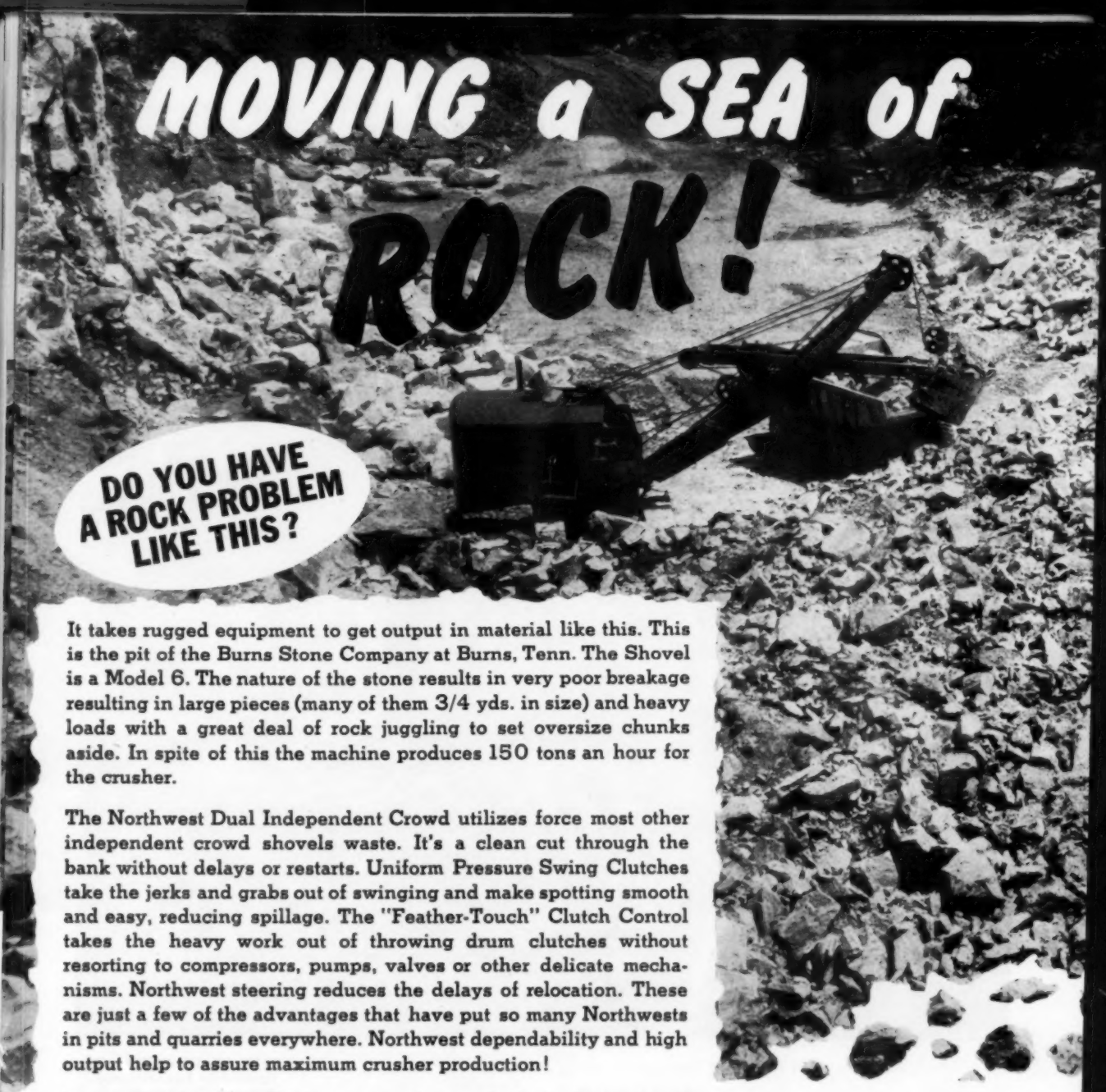


It takes rugged equipment to get output in material like this. This is the pit of the Burns Stone Company at Burns, Tenn. The Shovel is a Model 6. The nature of the stone results in very poor breakage resulting in large pieces (many of them 3/4 yds. in size) and heavy loads with a great deal of rock juggling to set oversize chunks aside. In spite of this the machine produces 150 tons an hour for the crusher.

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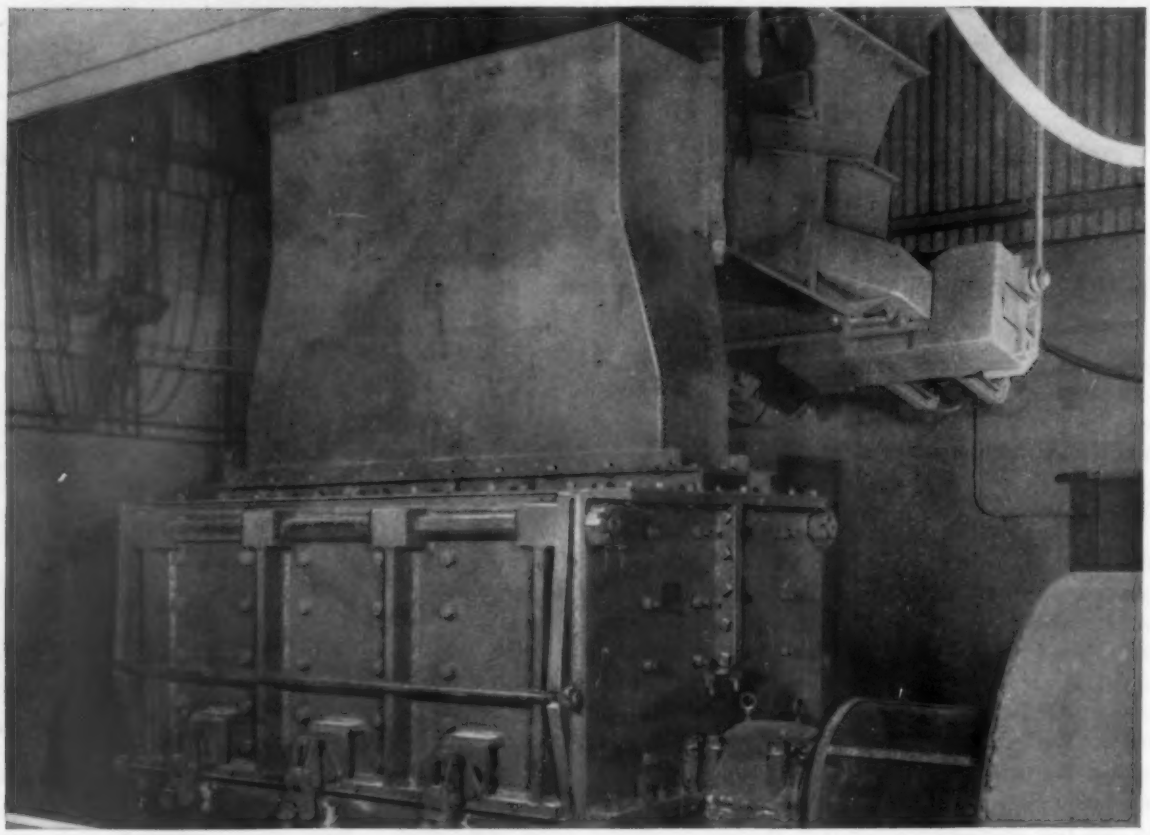
# "We're very well pleased with our Jeffrey Crusher"

## reports South Dakota State Cement Company



42" x 82" Jeffrey Type B Reversible Impact Swing Hammer Crusher mill at South Dakota State Cement plant, Rapid City, South Dakota. Crusher is fed by 5' x 6' Jeffrey enclosed electric vibrating feeder.

350 to 400 tons of limestone per hour are reduced by this Jeffrey crusher to ¾" x 0" size. The chief engineer for this plant says they are well pleased with this crusher and its Jeffrey feeder.

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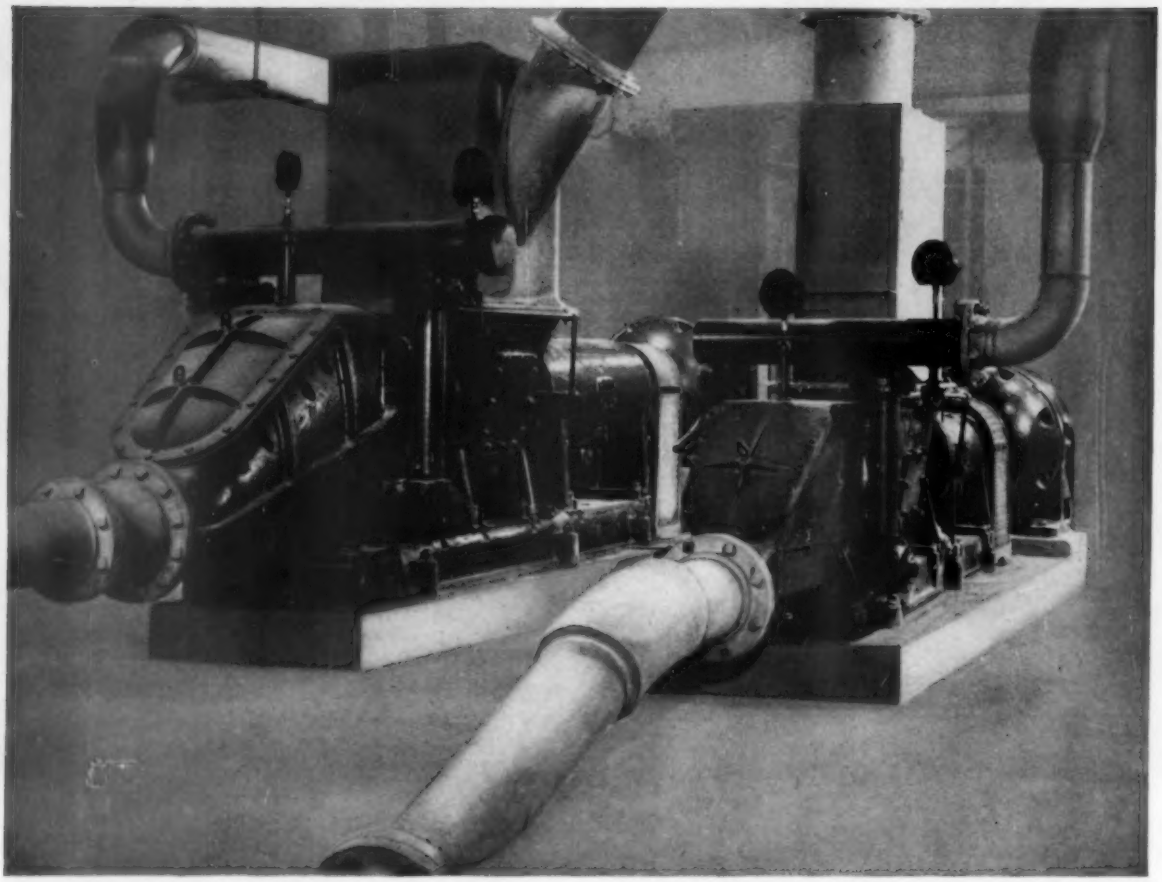

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# The Editor's Page

## *Cement Industry Expansion Going Ahead*

THE unprecedented expansion program being carried on by the cement industry, in spite of rumors to the contrary, is proceeding at an unabated pace. Not only are the programs under way being carried to completion as rapidly as possible, but those scheduled for later starting are also getting under way as planned. Moreover, several of the plants under construction have announced expansions even before the original facilities have gone into operation, and new expansions and new plants are being announced at frequent intervals for 1957 and even 1958 completion. Cement company officials vehemently deny that any announced expansions are being cancelled, curtailed, or purposely delayed, and the facts seem to bear them out.

Actually many of the programs under way have been delayed by weeks or months, and completion dates for some of those just starting have been set back considerably, due, however, to reasons beyond the control of the cement companies. The chief delaying factor has been a multiple shortage—of qualified and experienced engineers to design the work, of contractors and construction workers to do it, and of equipment and supplies. The steel shortage is and apparently will continue to be an important factor. Engineering and construction firms experienced in this field have greatly enlarged their staffs, and others have moved in from other fields; but the backlog of work continues to pile up. Manufacturers of cement mill machinery are operating at peak capacity, but backlogs of 12 to 18 months have piled up in some cases. Further delay has been caused in a few cases by strikes which affected both production and expansion.

THERE is no doubt remaining that the cement industry as a whole has developed a new attitude of confidence in the future, a belief that while certain sectors of our economy may drop below peak levels for a time, other sectors will compensate for them. At present residential building, automobile production and consumer credit are off from last year's record peaks, but their moderate decline has been fully offset by the rise in capital expenditures for plant and equipment and the rise in general construction activities of all kinds. It is expected that before the end of the year the above lagging factors will again be in balance. The growing certainty of a greatly expanded highway construction program has also helped to convince cement companies that construction levels and cement sales may waver now and then but that the demand will continue at an increasing rate for many years to come.

PROBABLY one of the most important factors in the change of attitude on the part of the cement industry is the price and profit situation. Only a few years ago cement prices were relatively far lower than those of comparable competitive products—so much so that profits were low and a ridiculously high rate of production was necessary in order to break even. This left the industry in a very vulnerable position in case of a drop in demand and naturally discouraged expenditures for plant expansion. As a result, most of the money spent went for replacement of old and inefficient equipment in order to reduce the cost of production. During the last few years prices have been gradually increased to a more comparable level, and the break-even point has dropped considerably. As a result, overexpansion of the industry would not be as serious a problem as a few years ago.

A brief resume of the history of the cement industry makes it obvious why there has been hesitancy in the past on the part of cement officials to greatly increase productive capacity. During the late '20s, when there was a business and building boom similar in many respects to the present one, the industry entered into an all-out expansion program. Then came the stock market crash and the depression which sent demand down to the lowest level since 1908. Many cement companies did not get out of the red until just before World War II. Then after two years of peak demand during the construction phase of our war effort came the lean years of 1944 and 1945, when the demand for cement fell to the lowest level since 1933.

One might think that in view of these past conditions the cement industry leaders would hesitate to enter into what might well be at least a temporary overexpansion of productive capacity. We believed for a time that as the full extent of the cement expansion boom became apparent, some companies would delay or cancel their plans. It is becoming apparent, however, that the boom is based largely on the growing realization on the part of cement manufacturers that a long-continued shortage of cement is an unhealthy situation and that a reasonable oversupply is much to be desired.

THE reasoning is that with cement in short supply, potential users will find other materials for construction; and the cement industry in this way actually has been subsidizing these competitors. It is felt that a shortage of cement also discourages the development of new uses for cement and the growth of those industries already using it. Why should anyone waste time, effort, and money in developing new products or expanding industries when there is no certainty that the amount of cement required will be available? The manner in which new products have been brought into the market in spite of the cement shortage is an indication of what certainly will happen when there is an ample supply. The cement industry aims to make certain that the future demand for its product will not be restricted by its unavailability in the desired quantity. By gambling on possible overexpansion the cement industry is insuring its future growth, along with that of the many industries dependent upon it.

Walter E. Trunkey

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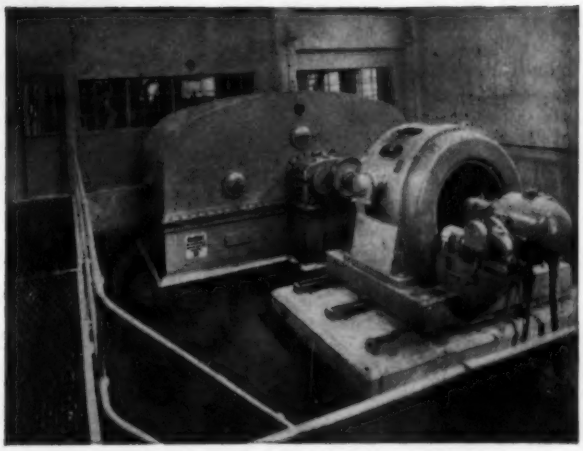

**Driving station for large clinker mill showing motor and Symetro gear in separate enclosure (right).**

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# Washington News Letter

THE most exciting development in Washington these days is the effort of the Federal Reserve Board to keep the economy on an even keel. This operation doesn't get the publicity it deserves because (1) it is fairly complex and, therefore, hard to explain, and (2) it smacks just a little bit of economic planning, a term which has come to involve some undesirable overtones.

For almost the first time since it was organized in 1913, the Federal Reserve Board has both the willingness and the freedom to use its powers in the full interest of economic stabilization—to prevent any major rise or fall in the general level of prices or serious unemployment.

In its early years the Federal Reserve Board generally had the freedom to try to do these things but it was comparatively timid in its approach. As a result, the boom of the 1920's and even the depression of the 1930's showed little evidence of the moderating influence of the Federal Reserve Board.

During the Roosevelt New Deal and the Truman Fair Deal days the Federal Reserve Board was prevented by government policy from exercising any substantial independence. For the most part, its efforts were devoted to the maintenance of a steady market for government bonds, which had to be sold in increasing quantities to finance the fight against an internal enemy — economic depression—and then fight against the external enemies—Germany and Japan.

Really, only since the Eisenhower Administration has the Federal Reserve Board been permitted to use its powers boldly in the interest of economic stabilization; and a revitalized Board has been willing to try its hand at this important job. The continuing prosperity would appear to be justifying its work, although it is really too soon to give an unqualified judgment.

Essentially, the Federal Reserve Board has three tools which it can use to accomplish its stabilization objectives. All of them work through their effect on the interest rate. The general principle is that if the interest rate is raised, money is made less accessible, and business activity, both in the form of transactions and investments, is slowed down. Thus,

**By S. HERBERT UNTERBERGER**

inflation is prevented or, at least, retarded. On the other hand, if the interest rate is lowered, many activities are made sufficiently profitable to be engaged in, and business activity is speeded up; deflation is prevented or, at least, retarded.

The three well-known tools are the following:

1. Control over the reserve requirements of member banks. If the required reserves are increased, member banks are generally less able to extend credit to their customers and *vice versa*.

2. Control over the rediscount rate. This is the rate of interest which member banks have to pay their regional Federal Reserve banks for loans. If the rate is high, the member banks are less inclined to borrow, or they must charge higher rates for loans to their customers.

3. Open market operations, that is the purchase and sale of government securities on the open market. The sale of government securities by the Board to banks or private holders drains off funds, a situation which makes money less accessible and also generally raises interest rates.

When the Federal Reserve Board wants to temper a boom, it can either raise reserve requirements, raise rediscount rates, or sell government securities; or it can take two or more of these actions concurrently. Since the Eisenhower Administration has been in power, it has used all of these methods. Here is the step-by-step record which shows how the Board used its power to expand or contract business activity:

Contractionary—Jan., 1953: Raised discount rate from 1¾ to 2%.
Expansionary—Feb., 1953: Lowered margin requirements from 75 to 50%.
Expansionary—July, 1953: Reduced reserve requirements on demand deposits:
from 24 to 22% for central reserve city banks
from 20 to 19% for central reserve city banks
from 14 to 13% for country banks.
Expansionary—April through Dec., 1953: Bought $1,400,000,000 of government securities.
Contractionary — Dec., 1953, through Mar., 1954: Sold $700,000,000 of government securities.
Expansionary—Feb., 1954: Lowered discount rate from 2 to 1¾%.
Expansionary—April through June, 1954: Bought $400,000,000 of government securities.
Expansionary—April, 1954: Lowered discount rate from 1¾ to 1½%.
Expansionary—June, 1954: Reduced reserve requirements on demand deposits from 22 to 21% for central reserve city banks. Reduced reserve requirements on all time deposits from 6 to 5%.
Expansionary—July, 1954: Reduced reserve requirements on demand demand deposits
from 21 to 20% for central reserve city banks
from 19 to 18% for central reserve city banks
from 13 to 12% for country banks.
Contractionary — June through Aug., 1954: Sold $1,000,000,000 of government securities.
Expansionary—Aug. through Dec., 1954: Bought $900,000,000 of government securities.
Contractionary — Dec., 1954, through Feb., 1955: Sold $1,300,000,000 of government securities.
Contractionary—Jan., 1955: Raised margin requirements from 50 to 60%.
Contractionary—Apr., 1955: Raised discount rate from 1½ to 1¾%.
Contractionary—Apr., 1955: Raised margin requirements from 60 to 70%.
Expansionary — June to July, 1955: Bought $500,000,000 of government securities.
Contractionary—July to Aug., 1955: Sold $300,000,000 of government securities.
Contractionary—Aug., 1955: Raised discount rate from 1¾ to 2%.
Contractionary—Sept., 1955: Raised discount rate from 2 to 2¼%.
Expansionary—Aug., 1955, through Dec. 1955: Bought $1,000,000,000 of government securities.
Contractionary—Nov., 1955: Raised discount rate from 2¼ to 2½%.
Contractionary — Dec., 1955, through Jan., 1956: Sold $1,300,000,000 of government securities.
Contractionary — Apr., 1955: Raised discount rate from 2½ to 2¾%.

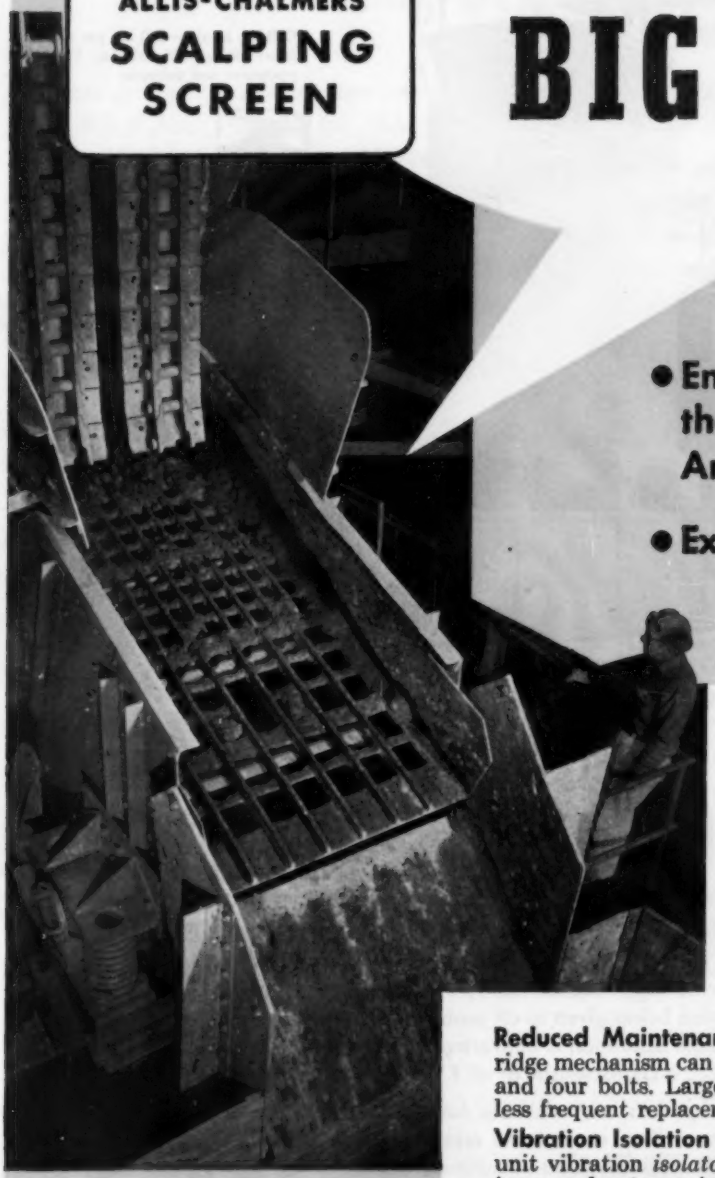
The pattern which emerges is quite clear. After an initial contractionary step, taken immediately following the inauguration of the Eisenhower Administration, the series of steps taken through 1953 and the first half of 1954 were primarily expansionary. It will be remembered that this was the period of the letdown after the Korean War and the so-called 1953 recession.

Thereafter the steps were primarily contractionary. The only exceptions were toward the middle and end of the year when, to meet the increased demand for money which occurs at those times, the Federal Reserve Board bought securities and thereby increased the amount of money in the banks and in the hands of individuals. As soon as the season ended, a greater contractionary step was taken.

(*Continued on page* 56)

# The BIG SCREEN for the BIG JOBS

**ALLIS-CHALMERS SCALPING SCREEN**



- **Engineered to Handle the Toughest Job in Any Rock Products Flow**
- **Extra-Large Mechanism**

HERE'S an *extra heavy duty* screen built to take punishing loads coming from your primary crusher. Its rugged cartridge-type, oil-lubricated mechanism features giant bearings — the largest ever installed in a vibrating screen. The heavy I-beam and channel-constructed screen deck support frame can withstand impact of large pieces and high tonnage.

**Reduced Maintenance** — Simplified two-bearing cartridge mechanism can be pulled out after removing sheave and four bolts. Large size bearings mean extended life, less frequent replacement.

**Vibration Isolation** — Standard design includes multi-unit vibration *isolators* — two per corner, each with an inner and outer spring arrangement. Vibration to building or structure is isolated even when sticky materials adhere to the screen.

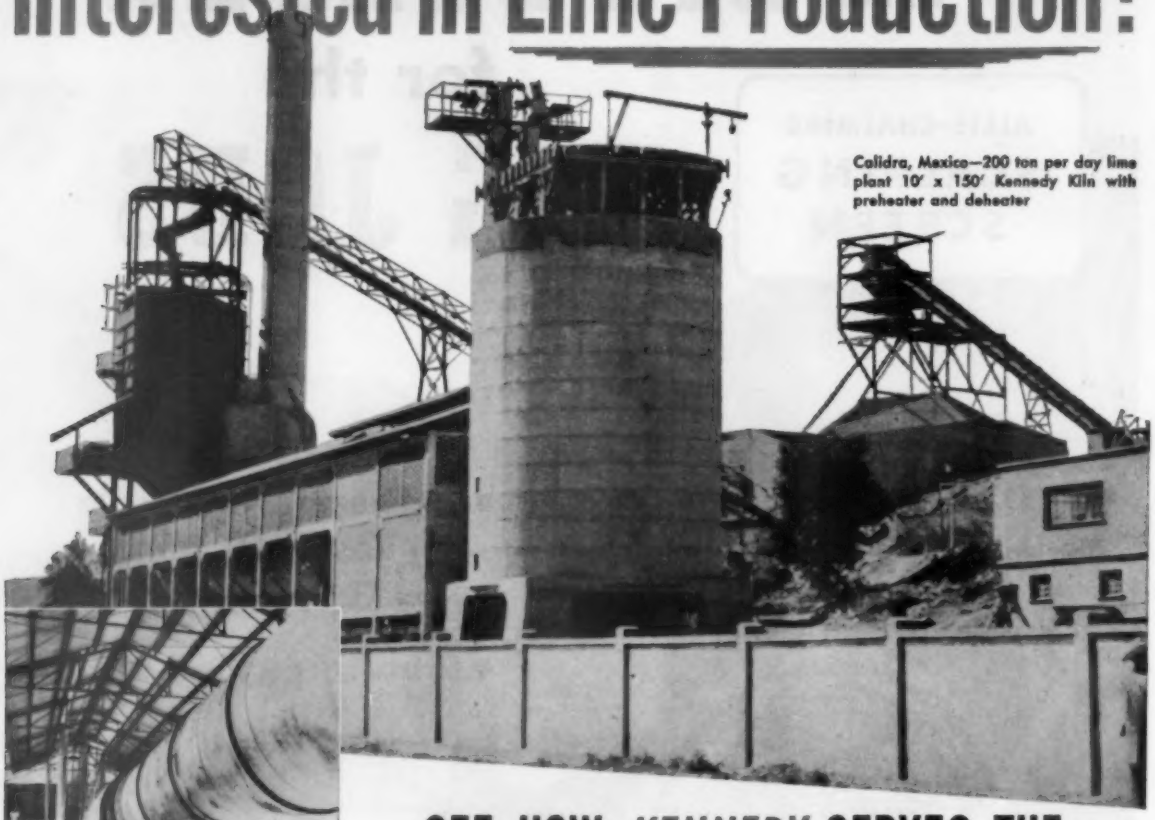
**FIELD TESTED FOR 3 YEARS**

*For complete information, see your A-C representative or write for Bulletin 07B8368, Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.*

**ALLIS-CHALMERS**

A-5063

# Interested in Lime Production?



Calidra, Mexico—200 ton per day lime plant 10′ x 150′ Kennedy Kiln with preheater and deheater

Calidra, Mexico—200 ton per day lime plant 10′ x 150′ Kennedy Kiln with oil pre-heating coils looking towards firing end

Calidra, Mexico—200 ton per day lime plant 10′ x 150′ Kennedy Kiln with oil burner

Calidra, Mexico—200 ton per day lime plant 10′ x 150′ Kennedy Kiln with preheater and deheater

## SEE HOW *KENNEDY* SERVES THE LIME INDUSTRY THROUGH ENGINEERING THE RIGHT MACHINERY & EQUIPMENT

High quality, uniform lime at the rate of 200 tons per day is the record of this typical KVS *engineered* installation for CALIDRA, Mexico.

Every piece of equipment was KVS engineered and designed to perform a specific task—economically, systematically, consistently, with due consideration being given to all problems of location, temperature and terrain. The whole operation is delivering high grade lime in *excess* of rated capacities . . . a characteristic of *all* KVS installations.

KVS engineers are available for consultation anywhere. Let us help you solve your lime, cement and crushing problems. Send for bulletins describing KVS machinery and equipment.

# KENNEDY-VAN SAUN

## MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.

# KENNEDY COMPLETE CRUSHING PLANT

## *for* MIAMI RIVER QUARRIES, INC.

## Now producing OVER 175 TONS per hour!

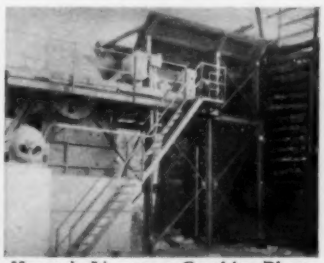
Designed and built by KVS to meet the specifications of the Miami River Quarries, Inc., Sidney, Ohio, this complete crushing plant produces in excess of 175 tons per hour of Limestone, crushed and screened to required gradation.

KVS Equipment, operating under exposed conditions with perfect satisfaction, includes 30 x 42 Primary Jaw Crusher, 38½ "S" Gyratory Crusher, Vibrating Screens, Pan Feeder, Belt Conveyors, with all required auxiliary equipment.

This typical Kennedy installation is like numberless other KVS jobs, designed and equipped to produce peak capacities at low operating and maintenance cost. Our engineering department will furnish operating data, specification, etc., on request.

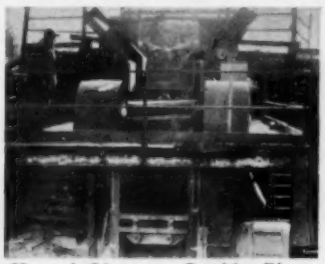
Miami River Quarries, Inc., Sidney, Ohio — 175 Ton Per Hour Kennedy Limestone Crushing Plant.

Kennedy Limestone Crushing Plant Showing Conveyors.



Kennedy Limestone Crushing Plant Comprising 42" Pan Feeder and 30" x 42" Jaw Crusher.

Kennedy Limestone Crushing Plant Comprising 38½ "S" Gyratory Crusher, Type AAA Vibrating Screen and Belt Conveyor.



Kennedy Limestone Crushing Plant Comprising 30" x 42" Primary Jaw Crusher.

*SEND FOR LITERATURE DESCRIBING KVS MACHINERY & EQUIPMENT.*

# KENNEDY-VAN SAUN

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# Basic Idea

SOLVES MANY REDUCER MOUNTING PROBLEMS

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# Line-O-Motor Drive

One base supports both speed reducer and motor in this simple, practical and foolproof mounting system . . . Now you can use standard N.E.M.A. motors and make change-overs in minutes—reducing both costly down-time and motor inventory.

Line-O-Power motorized drive solves many old problems . . . and opens new fields of advanced design for new applications. Available 1-75 H. P. for all Service Classes—Horizontal, Vertical, and Vertical Extended with Foot or Flange mounting—Double or Triple Reduction units available in Ratios from 5.06:1 to 238:1.

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*Better Power Transmission Through Better Gears*

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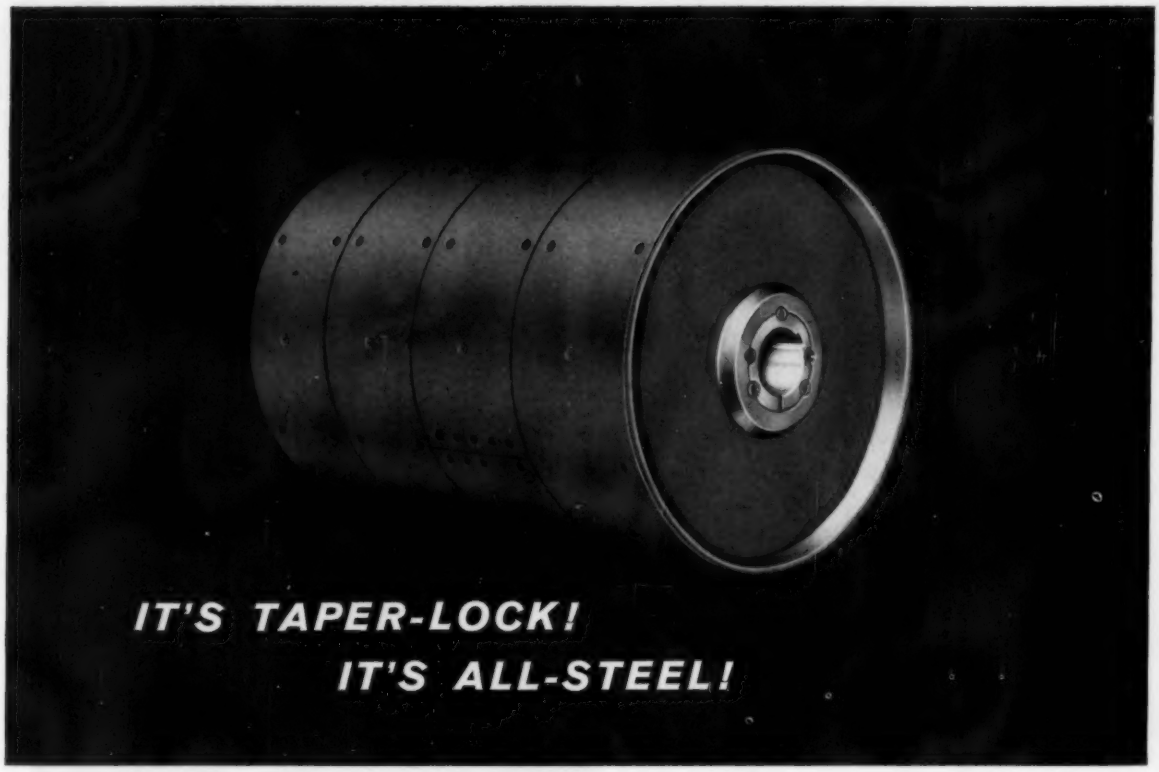



# The modern Conveyor Pulley for superior performance . . .

One tough application after another proves beyond doubt that you can't beat a lagged, Taper-Lock Steel Conveyor Pulley for the hard jobs! Here is the score on their use in rugged coke plant service. In this particular case the installation was on belts from the quencher and loading belts to cars. The report was made after *three years of use.*

1. **One-third saving on initial cost.**
2. **Saving on maintenance; no redressing of pulley faces.**
3. **No appreciable wear on lagging.**

In addition, these Taper-Lock Steel Conveyor Pulleys provide the further benefits which are inherent in their design:

1. **No bolts to shear.**
2. **Easy on — easy off.**

Taper-Lock Steel Conveyor Pulleys have terrific impact capability. All welds are made by the submerged arc process for 100% strength. Taper-Lock's patented back-up bar permits a weld of the full rim thickness to give 100% penetration. And there are no bolts to give way!

Normally available from stock in all face widths and diameters from 6 inches to 8 feet. *Write for bulletin.*

**DODGE MANUFACTURING CORPORATION, 4000 Union St., Mishawaka, Ind.**

**CALL THE TRANSMISSIONEER** your local Dodge Distributor. Factory trained by Dodge he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Equipment" or write us.

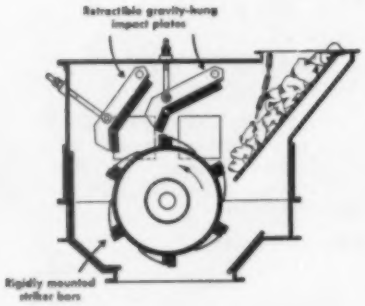
**DODGE**
*of Mishawaka, Ind.*

# *MORE NEWS ABOUT* ROCK CRUSHERS

● HAZEMAG now introduces the **BLOCK-BUSTER**, a multi-stage (combined primary and secondary) impact crusher of large capacity and extremely heavy construction.

● One **BLOCKBUSTER** has a reduction ratio so great that many materials—cement rock, gypsum, etc.—can be crushed from shovel size to grinding mill feed in one pass, eliminating the secondary crusher.

● And where needed there is the special Hazemag "fineness-control" feature, yielding generous fractions in the desirable small aggregate sizes.




***Cement, Lime and Gypsum mills alone account for more than 300 Hazemag Impactors. Over 1000 Hazemag Impact Crushers now installed all over the world.***

**Shown above: A typical "double-stage" reduction of cement rock—from 36"-40" shovel size to 80%-85% minus ½"—in one pass, open circuit.**

HAZEMAG

# HAZEMAG IMPACT CRUSHERS

**SALES AND ENGINEERING OFFICES THROUGHOUT THE WORLD**

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# if you're building a new plant, you have 48 states to choose from...

If high-grade Bituminous Coal and valuable chemical limestone are essential to the successful operation of your new plant, why not build near the world's greatest source of these raw materials?

There's a variety of fine coal mined in the Land of Plenty* to meet your specific requirement, and the supply is virtually unlimited.

Limestone of highest purity is plentiful, too. At a single location on the N&W there's a newly discovered source that's the largest in the eastern half of the U. S. Analyses show an average of 97.5% calcium carbonate.

Let our plant location specialists tell you more about these important minerals and many other reasons why you should locate in the Land of Plenty. Your inquiry will be handled in confidence and without obligation.

**And here are typical analyses ***

| | DNL-1-1 | DNL-1-2 | DNL-1-3 |
|---|---|---|---|
| SILICA ($SiO_2$) | .36% | .30% | .34% |
| IRON OXIDE ($Fe_2O_3$) | .072 | .043 | .049 |
| ALUMINA ($Al_2O_3$) | .21 | .20 | .19 |
| LIME (CaO) | 55.00 | 54.90 | 55.40 |
| MAGNESIA (MgO) | .65 | .62 | .51 |
| SULPHUR (S) | .012 | .011 | .015 |
| PHOSPHORUS (P) | .006 | .006 | .009 |
| IGNITION LOSS | 43.20 | 43.50 | 43.20 |
| CALCIUM CARBONATE (Calculated) | 97.90 | 97.72 | 98.51 |
| MAGNESIUM CARBONATE (Calculated) | 1.36 | 1.30 | 1.07 |

* Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

*WRITE, WIRE or PHONE—*

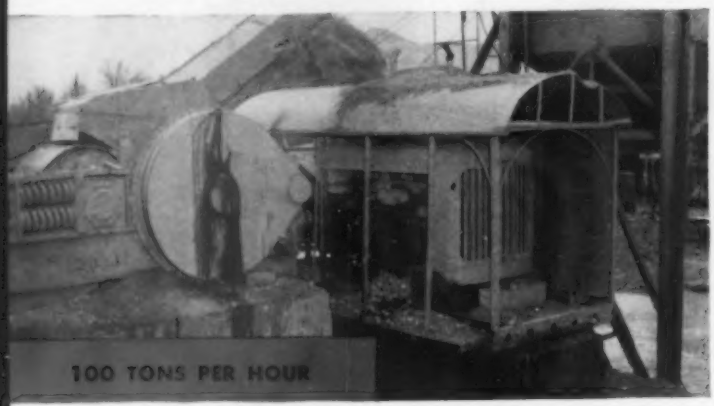
**INDUSTRIAL AND AGRICULTURAL DEPT.**
**Drawer PO-713 (Phone 4-1451, Ext. 474)**
**Norfolk and Western Railway**
**ROANOKE, VIRGINIA**

## Norfolk and Western Railway

* The 6 great states served by the Norfolk and Western—Virginia, West Virginia, Ohio, North Carolina, Maryland and Kentucky.

BASE MATERIAL

T. M. Brown & Sons, Abilene, Texas, stock-piled 230,000 cu. yds. of base material for a Texas road—produced 1600 yds. per 10-hr. day with this Cedar Rapids primary and booster crusher set-up. An International UD-18 diesel powers the jaw crusher and a UD-14 keeps the secondary humming. Pit floor and truck roads were cleared with an International TD-14 tractor.



100 TONS PER HOUR

Two International diesel engines team up in Tennessee to produce 100 to 120 tons of washed gravel per hour for the Cordova Sand and Gravel Co. A big International UD-24 engine powers the Cedar Rapids roll crusher shown here—produces ¾" to 1" material from bank run gravel. Another International diesel produces clean water, 1200 GPM (55 ft. lift) through a Fairbanks-Morse turbopump. Power *balance* aids efficiency.

DIESEL ELECTRIC WASH PLANT

When this portable, Cedar Rapids, electric wash plant moves to a new pit, the electric generator goes right along. Trailer-mounted, an International UD-1091 diesel engine drives a 150 KW generator to wash and classify 150 tons of sand and gravel per hour. Transport is simplified and speeded up.

**Choose from 18 heavy-duty International engines—12 carbureted, 6 diesel—16½ to 200 net hp.**

See you at the **CHICAGO ROAD SHOW** Jan. 28-Feb. 2, 1957

# SPECIFY International® Engine POWER

## ...sized and modified for Quarry needs

When the Cedar Rapids primary crusher gulps a load of rock, it signals the International diesel engine for more "horses"—and response is lightning-fast.

International's high torque lugging ability is only one of many standard equipment built-ins that give this heavy-duty power decisive advantages on any kind of power drive.

In addition, *already-engineered* modifications of International engines are available in a wide choice of combinations to fit a tremendous range of pit or quarry equipment applications.

These modifications range from dimension changes, adapting for belt or direct drive, to matching up of performance characteristics needed for special applications.

*One typical International engine, for instance, with correctly specified modifications, powers an International crawler tractor—and 46 makes of crushers, compressors, loaders, excavators, pumps, generators, mixers, graders, pavers, and compactors.*

Quarry operators from Minnesota to Mississippi, Seattle to Syracuse, know and depend on International power and the second-to-none parts and service organization behind it!

In your quarry or gravel pit, you too will find it pays to specify International engines as original or replacement power—pays in job efficiency and simplified maintenance. Backing up International power is one of the most experienced heavy-duty engine parts and service organizations in the business. At your service are 173 power unit distributor locations, hundreds of power unit dealers, 11 parts depots.

**INTERNATIONAL® CONSTRUCTION EQUIPMENT**

International Harvester Company
180 North Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Tractor and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks.

# News of the Industry

## Standard Lime & Cement Opens 1,400,000-Bbl. Plant At Martinsburg, W. Va.

Newly installed cement producing facilities at the Martinsburg, W. Va., plant of the Standard Lime and Cement Company, a subsidiary of the American-Marietta Company, have been put into operation.

This new plant, which incorporates the most modern and efficient developments in the industry, has an estimated capacity of 1,400,000 bbl. annually. The 1956 cement output of the entire Martinsburg plant already has been sold to Standard's customers.

Equipment orders for the recently announced expansion of American-Marietta's Southern Cement Company Division plant at Roberta, Ala., have been placed. Southern's expansion, which will increase its output by 60 percent, is scheduled for completion by April 1, 1957.

### Huron Portland Cement Co. Buys Port Site in St. Joseph

After considerable opposition and delay, Huron Portland Cement Company representatives recorded deed to a port site at St. Joseph, Mich., for $9,500. The controversial 4.65-acre parcel, most of which is under water, was acquired from the New York Central System, for the purpose of building a handling plant.

The deed requires Huron to build the plant within three years, an extension to be granted if federal, state, of local governmental interference should hold up construction. In the event that the cement firm fails to build the facility, it will have two years in which to sell the property. Huron's announcement of the proposed plant construction was met with sharp protests from the area planning commission and local residents and organizations.

### Stockholders Approve Merger Of Mex-R-Co. and Eastern Firms

The consolidation of three eastern concerns with the Mexico Refractories Company, Mexico, Mo., was approved at the recent annual meeting of latter concern. National Refractories Company, Philadelphia, Pa., Big Savage Refractories Corporation, Frostburg, Md., and Niles Fire Brick Company, Niles, Ohio, which were wholly owned or controlled by Mex-R-Co, will now operate as divisions of the company.

Sales, engineering, research, and distribution of all refractory products will be co-ordinated and directed by Mexico management.

The construction of Mex-R-Co's fifth tunnel kiln at Mexico is expected to be completed by early summer. The additional burning kiln, and the new calcining kiln recently completed, will increase capacity of the Mexico plant by more than 20 percent.

## *Coming Events*

**June 4-5, 1956—St. Louis. Midyear directors' meeting, National Agricultural Limestone Institute, Inc., Chase Hotel.**

**June 4-7, 1956—Cleveland. Material Handling Institute and Material Handling show. Public Auditorium.**

**June 6, 1956—St. Louis. Midyear directors' meeting, National Crushed Limestone Institute. Chase Hotel.**

**June 17-22, 1956—Atlantic City. 59th annual meeting and 12th apparatus exhibit, American Society for Testing Materials. Chalfonte-Haddon Hall.**

**July 12-13, 1956—Lake Placid. field, Mo. Operating meeting, National Crushed Stone Association. Lake Placid Club.**

**October 10-12, 1956—Springfield, Mo. Operating meeting, National Lime Association. Kentwood Arms.**

**October 22-26, 1956—Chicago. 44th National Safety Congress and Exposition. Conrad Hilton, Congress, Morrison, and La Salle hotels.**

## National Safety Council Cites Pit and Quarry On Safety Promotion Work

Among the recipients of the National Safety Council's 1955 Public Interest Award, PIT AND QUARRY was the sole representative of nonmetallic minerals publications in the classification of specialized journals. The announcement of award recipients was made recently by spokesmen of the council. The citation is made annually to public information media for exceptional service in the cause of safety. Awards also went to daily and weekly advertising companies. This award is not made on a competitive basis.

In commenting on the announcement of the list, Ned H. Dearborn, president of the council, declared, "Influencing human behavior is the most difficult and the most important part of accident prevention. The only way to reach people is through public information media, and their wholehearted co-operation has played a vital part in the progress of the safety movement. We are proud to honor the outstanding safety leadership represented by these awards."

### General Portland Cement Co. Plans Expansion at Miami

Smith W. Story, president of the General Portland Cement Company, has announced plans to double the production capacity of the plant scheduled for construction for this concern 19 miles west of Miami, Fla. It was stated that additional equipment will be installed, increasing inital capacity from 1,250,000 to 2,500,000 bbl. of cement annually. This change in plans will boost the cost of the installation from the original $10,000,000 to $15,000,000.

Mr. Storey explained that the decision to double capacity was reached after a study of the market had revealed a demand in Florida which will justify the move. He indicated that the additional equipment needed will mean only minor changes in the appearance of the plant. Another kiln will be added, along with more milling equipment. In the milling department operation will be on a 24-hour basis, instead of only 16 as originally planned.

## High April Contract Total Revealed by Dodge Corp.—4-Month Volume a Record

Continuing strong demand for building and engineering structures boosted contract awards for future construction in the 37 Eastern states to a total of $2,421,497,000 in April, according to the F. W. Dodge Corporation, construction news and marketing specialists. This was a record April, up 4 percent over April, 1955, and the second highest contract figure for any month in Dodge history. (May, 1951, in which $980,000,000 Atomic Energy Commission awards were let, was the highest.)

A new first four-month record of $8,521,369,000 was also established. This total was 13 percent greater than that of the 1955 period.

According to Dodge reports, the April residential figure of $1,144,160,000 was by a small margin the greatest for any month in Dodge history; it was up 7 percent over April, 1955.

April also set a record for the month in non-residential contract awards for future construction at $821,549,000, up 16 percent over April, 1955.

Although heavy engineering contracts at $455,788,000 were down 17 percent when compared to April, 1955, the total was greater than March, 1956.

Major construction categories also set first four-month records, as follows: non-residential, $2,993,989,000, up 17 percent over the first four months of 1955; residential, $3,743,188,000, up 8 percent; and heavy engineering, $1,784,192,000, up 20 percent over the 1955 period.

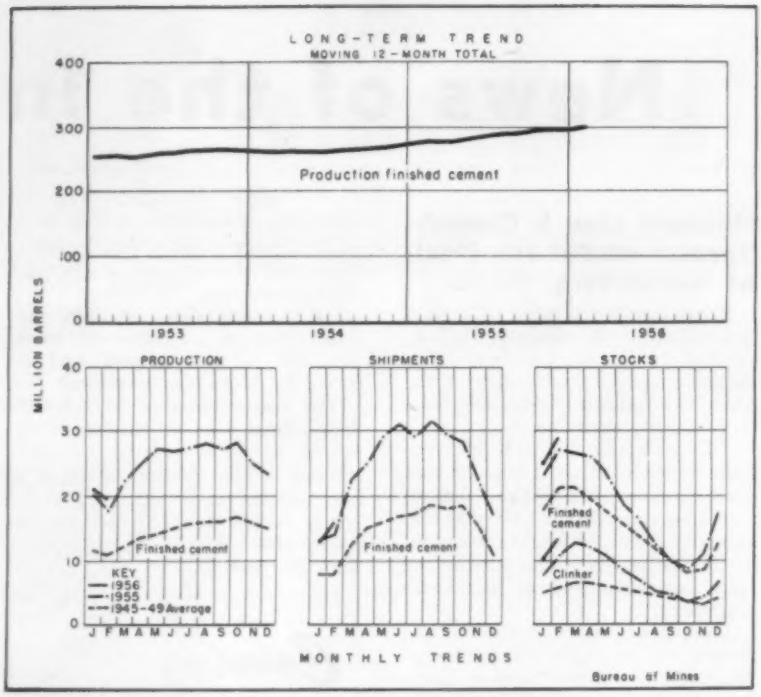
## S. C. Hadden Dies at 73—Noted Highway Promoter

Samuel C. Hadden, formerly executive secretary of the Indiana Mineral Aggregates Association, Inc., died at his home in Indianapolis on May 9. He was 73 years old.

Mr. Hadden received his degree in civil engineering at the University of Illinois, and then served on the faculty of Michigan Agricultural College for several years. In 1911 he became associate editor of *Engineering and Contracting*, a civil engineering publication. Subsequently he served in other editorial posts, and was then named executive secretary and engineering director of the Indiana Sand and Gravel Association, the predecessor of the Indiana Mineral Aggregates Association.

He was also chairman of the State Highway Commission of Indiana and consulting highway engineer for the Automobile Club of Michigan and the Chicago Motor Club.

In 1952 Mr. Hadden received the George S. Bartlett award for having made "an outstanding contribution to highway progress." Some years ago he served as president of the American Association of State Highway Officials.




SUMMARY—Production of finished portland cement in February, 1956, as reported to the U. S. Bureau of Mines, totaled $19,578,00 barrels—an increase of 11 percent over February, 1955. Mill shipments in February, 1956, totaled 15,929,000 barrels—an increase of 15 percent compared with February, 1955. Stocks of 28,939,000 barrels of finished portland cement on hand February 29, 1956, were 7 percent more than on the same date a year ago. Clinker production during February, 1956, totaled 23,131,000 barrels—an increase of 11 percent over the February, 1955, figure.

PRODUCTION—One hundred and fifty-five (155) plants in 37 states and Puerto Rico reported a production of 19,578,000 barrels of finished portland cement during February, 1956, compared with 17,611,000 barrels in February, 1955.

Clinker production for the month of February, 1956, was 23,131,000 barrels, compared with 20,767,000 barrels during the same month in 1955.

Clinker figures for 1955 and 1956 are not strictly comparable to those of 1954 and earlier years because producers are now asked to report clinker in terms of the number of 376-lb. barrels of finished portland cement that could be produced from the quantity of clinker in question, whereas previously the unit of measure was the 376-lb. barrel of clinker.

Production of high-early-strength portland cement in February, 1956, totaled 1,313,000 barrels, an increase of 18 percent over the 1,114,000 barrels reported in February, 1955.

Production of prepared masonry was 829,000 barrels during February, 1956, a decrease of 24 percent from the 1,093,000 barrels reported in February, 1955.

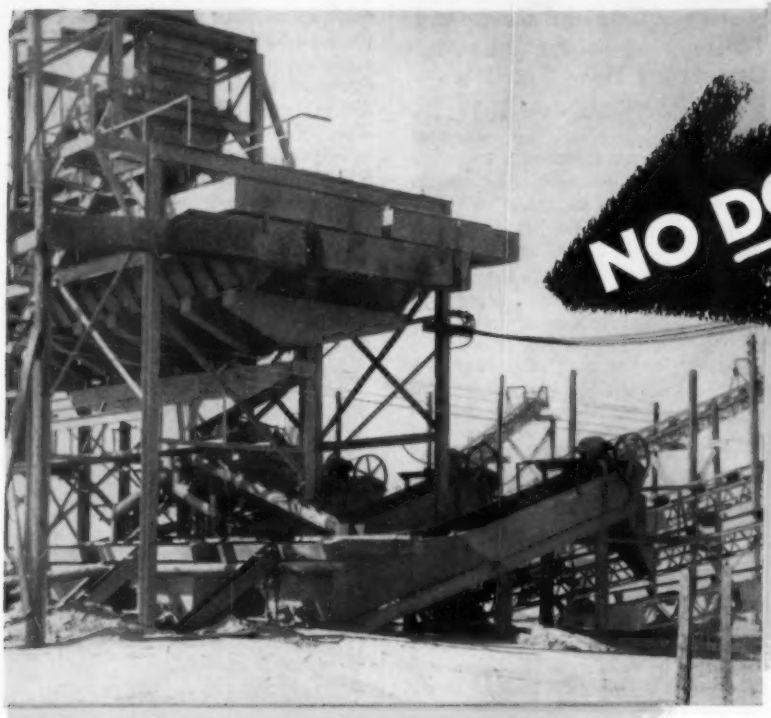
SHIPMENTS—Mill shipments of finished portland cement were 15 percent higher in February, 1956, than in February, 1955, and totaled 15,929,000 barrels. The figures for 1955 and 1956 are not strictly comparable with mill shipments of 1954 and earlier years because they no longer include the barrels of finished portland cement used in the manufacture of prepared masonry cement.

Shipments in February, 1956, were higher in 16 districts and lower in 4 than in February, 1955. The greatest increases were registered in the western Pennsylvania-West Virginia and the Kansas districts. The greatest decreases were in the Oregon-Washington and the western Missouri-Nebraska-Oklahoma-Arkansas districts.

Mill shipments of high-early-strength portland cement in February, 1956, totaled 756,000 barrels, an increase of 8 percent compared with February, 1955. As usual, nearly half of these shipments were from mills in the eastern Pennsylvania-Maryland and the Michigan districts. No shipments were made from mills in Puerto Rico.

Mill shipments of prepared masonry cement in February, 1956, totaled 729,000 barrels, a decrease of 6 percent compared with February, 1955. Over half of these shipments were from mills in four districts: Indiana-Kentucky-Wisconsin, eastern Pennsylvania-Maryland, Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi, and Michigan. Prepared masonry cements are sold in barrels of varying weights; to combine individual reports, these variables have to be reduced to a common weight. For uniformity with the portland cement data, prepared masonry cement data are shown in equivalent barrels of 376 lb.

STOCKS—Mill stocks of 28,939,000 barrels of finished portland cement were on hand February 29, 1956, an increase of 7 percent over the 27,087,000 barrels on hand February 28, 1955. Stocks of clinker increased 26 percent from 10,882,000 barrels on February 28, 1955, to 13,732,000 barrels on hand on February 29, 1956.



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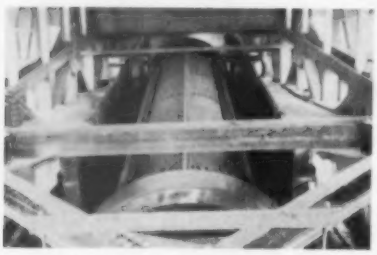

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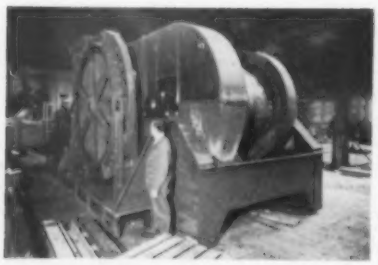

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## National Gypsum Company To Develop Mich. Deposit, Construct New Facilities

National Gypsum Company directors voted approval of an estimated $20,000,000 stock issue to provide new capital to finance an expansion of the company's facilities.

According to Melvin H. Baker, chairman of the board, the company will use the net proceeds for the development of a gypsum deposit in northern Michigan near Lake Huron, which is estimated to contain about 60,000,000 tons. Gypsum rock may be shipped by water from this point to plants to be built in the Great Lakes region.

"It is estimated," Mr. Baker added, "that $6,000,000 of funds will be used for development of the new deposit and $13,000,000 will be used to acquire plant sites and to construct two plants for the manufacture of wallboard, lath, plaster, and other gypsum products."

Another feature of the proposed facilities in northern Michigan is a big aerial tramway which is to extend more than a mile into Lake Huron. National Gypsum has made application with the U. S. Army Corps of Engineers in Detroit for a federal permit to construct the tramway. The line would be located a mile and a half south of the Tawas River, and would extend 6,000 ft. into the lake. It is planned to design the tramway with a vertical clearance of 30 ft. Company officials consider the proposed tramway, first of its type in the Great Lakes region, to be the most efficient and economical method of transporting of gypsum rock in the new area.

Mr. Baker noted that about $21,000,000 (already provided) will be required to complete new plants and additions now under construction. During the last ten years National Gypsum has spent approximately $107,000,000 for construction of new plants, for gypsum, limestone and asbestos fiber deposits, for additions and improvements to its other plants and properties, and for replacing equipment. In 1955 the company spent more than $31,000,000 on expansion.

## January Lime Sales Decline From Preceding Months

Domestic sales of open-market lime in January, 1956, (768,415 short tons) decreased slightly from the previous month's, according to reports issued by producers to the U. S. Bureau of Mines.

Sales of agricultural, refractory, chemical, and other industrial uses decreased, whereas a slight increase was noted in building lime.

The table shows sales by types and major uses.

Mark Lintz, consulting engineer, San Francisco, Calif., is presently working in Houston, Tex., with Brown & Root, Inc., on the design of a cement plant. Brown & Root holds the general contract for the construction of a 2,500-bbl. per day and an 800-bbl. per day plant for the Republic Cement Corporation at Drake, Ariz.

The McLean Sand & Gravel Plant, Tuscarawas, Ohio, was recently purchased by Jack Lodge, Cadiz, Ohio, and Carl Stewart, Jewett, Ohio.

**Lime Sold by Producers[1] in the United States, in Specified Periods of 1955-56, by Types and Major Uses, in Short Tons**

| | November 1955 | December 1955 | January 1955 | January 1956 |
|---|---|---|---|---|
| By types: | | | | |
| Quicklime | 629,496 | 649,556 | 528,173 | 628,132 |
| Hydrated lime | 162,070 | 139,247 | 123,799 | 140,283 |
| Total lime[2] | 791,566 | 788,803 | 651,972 | 768,415 |
| By uses: | | | | |
| Agricultural: | | | | |
| Quicklime | 14,234 | 10,372 | 4,140 | 4,281 |
| Hdrated lime | 8,398 | 6,109 | 6,995 | 6,695 |
| Total | 22,632 | 16,481 | 11,135 | 10,976 |
| Building: | | | | |
| Quicklime | 15,395 | 16,256 | 25,488 | 13,209 |
| Hydrated lime | 79,955 | 61,029 | 58,759 | 65,699 |
| Total | 95,350 | 77,285 | 84,247 | 78,908 |
| Chemical and other industrial: | | | | |
| Quicklime | 383,649 | 401,497 | 326,915 | 396,175 |
| Hydrated lime | 73,717 | 72,109 | 58,045 | 67,889 |
| Total | 457,366 | 473,606 | 384,960 | 464,064 |
| Refractory (dead-burned dolomite) | 216,218 | 221,431 | 171,630 | 214,467 |

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.
[2]Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

## Stuart Duncan Dies at 72—Veteran Staff Member Of Marquette Cement Co.

Stuart Duncan, 72, chairman of the board of the Marquette Cement Manufacturing Compaany and president of the LaSalle State Bank,

Stuart Duncan

LaSalle, Ill., died on May 24 at a Chicago hospital after an illness of several months.

Mr. Duncan was the son of Nicholas W. Duncan, who was one of the founders of Marquette Cement Manufacturing Company. He began his career as assistant treasurer for Marquette in 1906, became a director of the company in 1915, and chairman of the board in 1933. He had also been president of the LaSalle State Bank since 1927.

Mr. Duncan was a graduate of Niagara University and a lifetime resident of LaSalle, Ill. He had long been prominent in the civic and charitable affairs of the area.

---

Storage capacity of the Volunteer Portland Cement Company has been increased by 80 percent to meet emergencies such as the recent cement shortage. With the additional storage space, 1956 cement shipments are expected to be increased by 100,000 bbl. over last year's total of 2,100,000 bbl.

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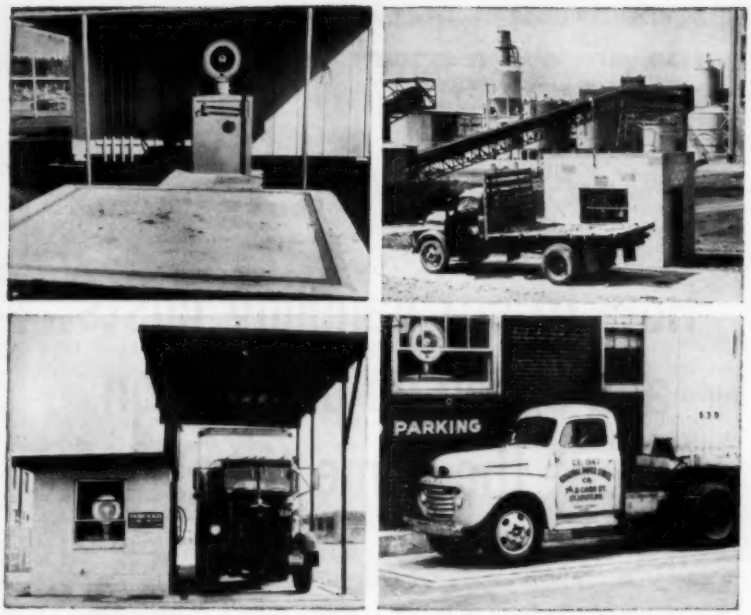
Construction of a combination cement, sand, and acid plant, and a shop building was recently begun by the Halliburton Oil Well Cementing Company at Wichita Falls, Tex. The present building will be used as a warehouse and will also house the field offices.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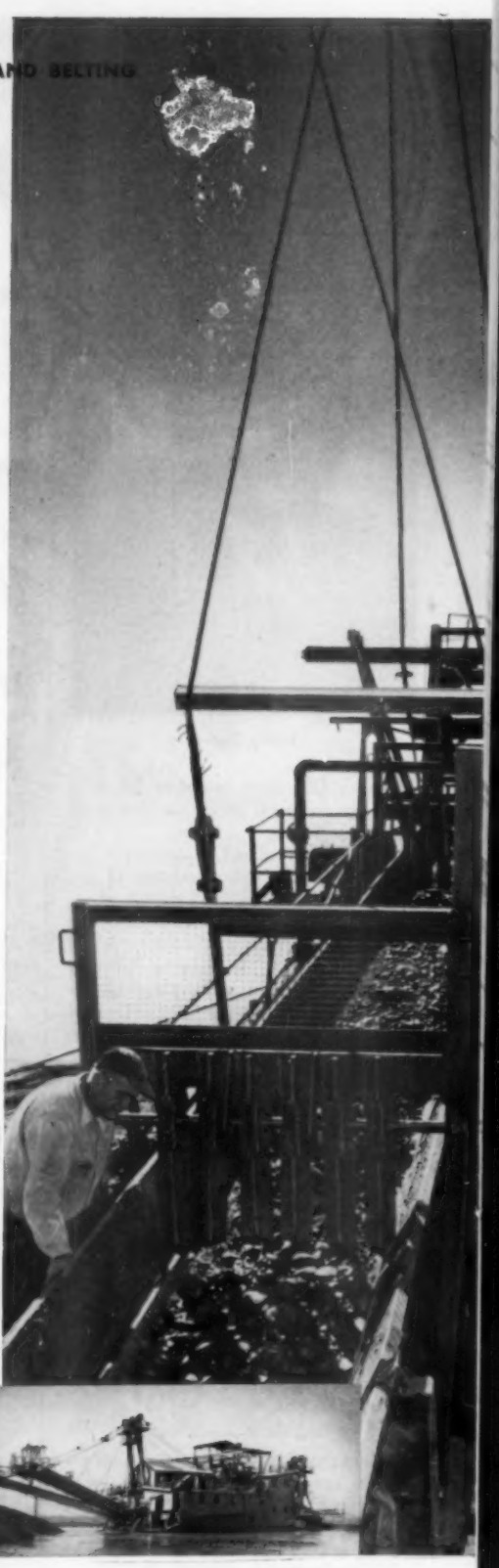
**INDUSTRIAL RUBBER PRODUCTS ARE A SPECIALTY WITH BOSTON,** not just a sideline. Boston designs and engineers each hose and belt to fit a specific job. As a result, you get better performance, longer life. Here's an example: at an aggregate plant in Virginia, a special Boston impact-resistant belt has given *five times more service* than any previous belt!

**YOUR BOSTON DISTRIBUTOR GIVES YOU FAST DELIVERY, TOO,** to keep production moving. He's your local Boston Man. Call him today for expert advice on the right hose and belt for you.

**SPECIAL BOSTON DESIGN FOR EFFICIENT PERFORMANCE:** Cleaning up the loading area under a messy stacker belt is an expensive, time-consuming job. Boston Herringbone Stacker Belt solved that problem in the dredging operation of a California company shown at right. The special ridge design of this Boston belt prevents rock, sand, silt and water from sliding, regardless of the loading angle. That means less belt wear, more efficient operation and lower cleaning and maintenance costs.



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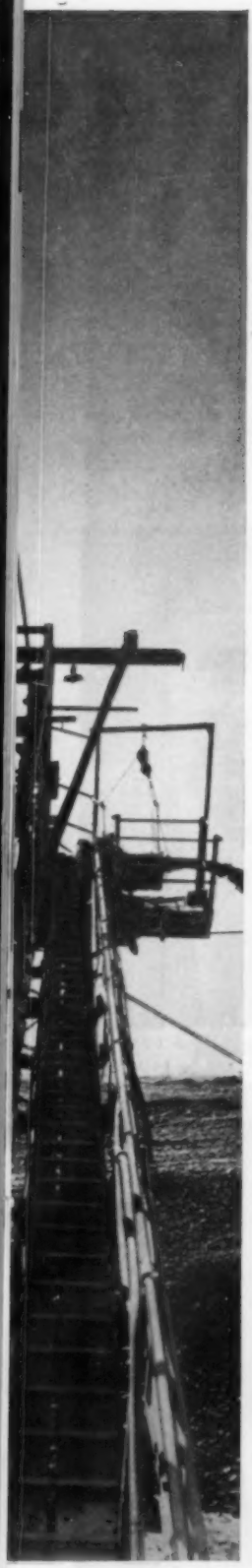
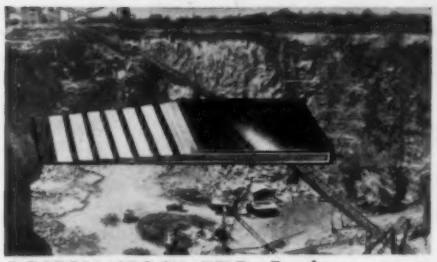
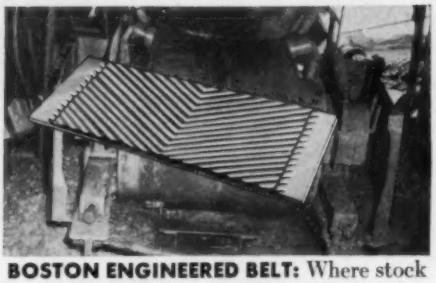


## BOSTON CHECKLIST FOR YOUR HOSE AND BELTING REQUIREMENTS

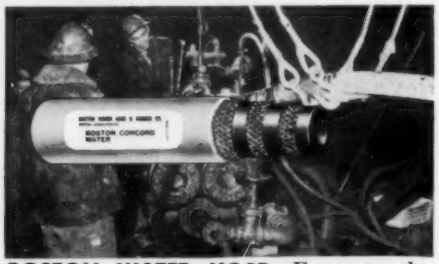


**BOSTON STOCK BELT:** Stock conveyor belts, like Boston Silver King, are made to last longer, even at high tensions, on heavy, long-distance hauls. That's because the plies of Boston belts are bonded at uniform tension to eliminate uneven stretch, give you greater economy, better performance.

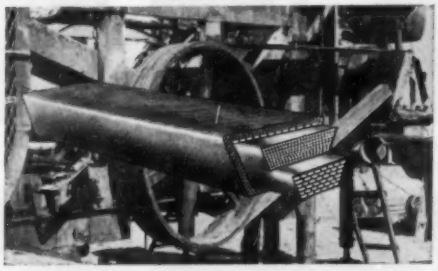


**BOSTON ENGINEERED BELT:** Where stock belts will not fit a special conveyor system, Boston designs and engineers a belt to meet the exact requirements. Mildew-resistant Boston Herringbone Belt for instance, is specially engineered to prevent "creeking" on steep wet rock and gravel conveyors.

**BOSTON AIR HOSE:** Designed for rugged service on air drilling rigs or pneumatic tools, all Boston heavy-duty air hose resists abrasion and shock, yet remains flexible and easy-to-handle. That's because they're engineered by Boston to stand up under the most severe working conditions.




**BOSTON WATER HOSE:** From tough, abrasion-resistant covers, to flexible, rough and ready carcasses, Boston Water Hose, with working pressures up to 300 pounds, gives you years of economical service. See your Boston Man. He has Boston Water Hose in sizes to fit every requirement.



**BOSTON V-BELT:** The heart of a Boston V-Belt is its cord construction. Multi-ply cords, firmly bonded to the other sections, prevent excessive stretch; sturdy fabric covering prevents moisture and dirt from weakening cord construction. This means fewer adjustments, less slippage, longer life.

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## Six Penn-Dixie Promotions Announced by President—Doolittle Given New Post

Election of Fred L. Doolittle to the newly-created post of executive vice-president of Penn-Dixie Cement Corporation has been announced by B. W. Druckenmiller, president. Mr. Doolittle, who has served as vice-president and general sales manager since 1950, was also elected to Penn-Dixie's board of directors.

At the same time L. L. Van Nest was elected vice-president and general sales manager, Hugh R. Hamilton became vice-president and assistant to the president; and M. L. Silcox was made vice-president for operations.

John H. Jones replaces Mr. Silcox as operations manager, and Donald L. Hensley succeeds Mr. Van Nest as assistant general sales manager, effective May 1, 1956.

Mr. Doolittle joined Penn-Dixie in the Boston office in 1929. He was appointed assistant sales manager of the Boston office in 1939 and became assistant sales manager of the New York district office in 1941. He was named general sales manager of the company in 1945.

Mr. Van Nest became associated with Penn-Dixie in 1941 as assistant sales manager in New York after 14 years with the Lehigh Portland Cement Company in sales capacities. He was appointed assistant general sales manager by Penn-Dixie in 1945.

Mr. Hamilton entered the cement business with Lehigh Portland Cement Company in 1928 after working with several companies in Washington, D. C. He joined Penn-Dixie in 1939 in the sales department and was appointed assistant to the general sales manager in 1945.

Mr. Silcox has served Penn-Dixie (and a predecessor company) since 1921, initially as a plant chemist. He became manager of the plant at Clinchfield, Ga., in 1945 and assistant operating manager for the company in 1952. He was named general operating manager in 1955.

Mr. Jones became associated with Penn-Dixie in 1948 as an engineer in the Nazareth, Pa., office. He became engineer of the Bath, Pa., plant

*(Continued on page 56)*

H. R. Hamilton

L. L. Van Nest

F. L. Doolittle

M. L. Silcox

John H. Jones

Donald L. Hensley

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Eimco 105 Tractor Excavators can work efficiently in small areas because of their built in features.

These features permit the Eimco 105 to work in many places such as narrow ditch digging, tunnels, water channels, mines, railroad cuts, highway widening jobs and numerous others including basement excavation as shown above.

The Eimco 105 features include: (1) Independent track control so that one track can be run forward while the other runs reverse providing spin turns in the length of the machine, (2) Up front position of the operator for better visibility in confined areas, (3) Overhead bucket motion, to eliminate the necessity of turning to discharge the bucket, (4) Simple easy controls, two small handles are all that control the motion of the tractor. Push for forward motion and pull for reverse motion.

Eimco 105 Tractor-Excavators are being used on construction jobs all over the world as well as in mines and quarries. These machines are operating longer periods at lower cost per yard loaded than any other equipment.

Investigate the Eimco Tractor-Excavator — it is the world's finest crawler tractor equipment.

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B-195

## Valentin, Hogberg, Weeda Named to Executive Posts By Mich. Limestone Div.

The appointment of Joseph A. Valentin as vice-president and manager of sales, Michigan Limestone Division, was announced by Christian F. Beukema, president of this United States Steel Corporation raw materials division. Mr. Valentin was formerly manager of sales and manager, northern district, which includes the Calcite and Cedarville plants and the Bradley Transportation Line.

At the same time, Mr. Beukema also named Carl G. Hogberg as assistant vice-president and Donald L. Weeda as treasurer in two other major executive appointments of the Michigan Limestone Division.

Mr. Valentin began his service with U. S. Steel nearly 38 years ago in 1918, when he was employed in the transportation department of Michigan Limestone & Chemical Company in Rogers City.

Since then, he has held the positions of chief chemist, director of industrial relations, and manager of the Calcite plant. When Michigan Limestone was consolidated with the Pittsburgh Limestone Corporation in 1951, he was appointed manager of the Calcite plant. Two years later, he was named manager of the northern district, and last year he received the additional responsibilities of manager of sales for the division. He will continue to direct responsibilities in these areas in his new position.

J. A. Valentin

C. G. Hogberg

Carl G. Hogberg, new division assistant vice-president, began his association with the U. S. Steel Corp. in 1935 as a blast-furnace apprentice at South Chicago Works. Prior to his appointment as assistant to the vice-president of Michigan Limestone last year, he was closely associated with U. S. Steel activities dealing with the technical aspects of blast-furnace and raw material development and usage.

Donald L. Weeda, newly appointed treasurer, is a graduate of Northwest Missouri State College in Maryville, Mo. He began his employment with U. S. Steel as a credit trainee with American Steel & Wire Division in Chicago. In 1951 he was transferred to the Michigan Limestone Division as assistant treasurer, the position he held prior to this latest appointment.

Donald L. Weeda


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### 44th Safety Congress, Show Scheduled for Oct. 22-26

The 44th National Safety Congress and exposition will be held October 22-26 in Chicago. Sessions on industrial safety have been scheduled at the Conrad Hilton, Congress, Morrison, and La Salle hotels.

Sessions on traffic safety will be held at the Congress, and those on commercial vehicle and transit safety at the La Salle. Farm and school safety will be discussed at the Morrison, and home safety at the Conrad Hilton.

---

International Minerals & Chemical Corporation's net earnings after taxes for the three-month period ended March 31, 1956, were $2,575,390, an increase of 8 percent over the third quarter of the previous fiscal year. Net sales of the corporation for the third quarter amounted to $28,583,089, a decrease of 5 percent from net sales in the third quarter last year.

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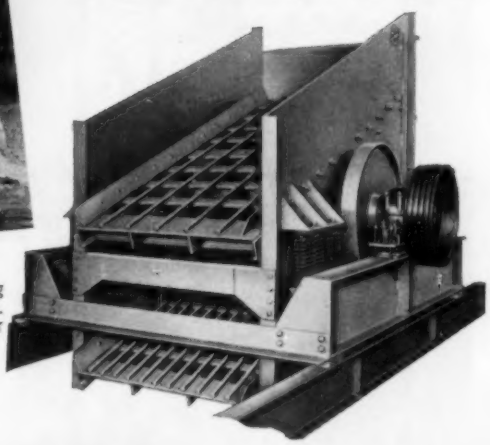
Fire, caused by an exploding oil heater, recently destroyed a gravel barge belonging to the Vincennes Gravel Company, Lawrenceville, Ill. Damage was estimated to be more than $15,000.

# HOW TO PICK SCREENS *that pay profits*

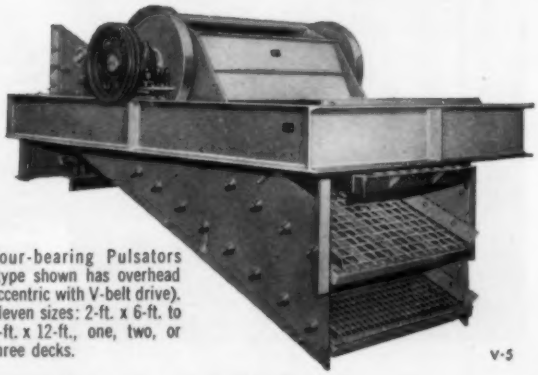
Screening aggregates is a tough job—but it can be done efficiently and at low cost—with Telsmith Vibrating Screens. This new Telsmith bulletin tells you how. It explains which type of screen is best for scalping . . . sizing . . . washing—and why Telsmith builds two types of four bearing screens and one type of two bearing screen. It describes each type; shows several new Telsmith Vibro-King features, including—new counterweight mechanism and new spring suspension, making it the smoothest and most efficient screen you can buy, either for scalping or finishing. Shows new heavy-duty tray construction; best methods for mounting screen cloth. Full of helpful pictures, diagrams and specifications.

***Get this NEW BOOK FREE—Ask for No. 290***



Heavy-Duty four bearing Scalpers—seven sizes: 3-ft. x 6-ft. to 5-ft. x 14-ft., one or two decks.

Two-bearing Vibro-King Screens—eleven sizes: 3-ft. x 6-ft. to 5-ft. x 16-ft., one, two, or three decks.



Four-bearing Pulsators (type shown has overhead eccentric with V-belt drive). Eleven sizes: 2-ft. x 6-ft. to 5-ft. x 12-ft., one, two, or three decks.

V-5

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## U. S. Gypsum, Certain-teed Win Gypsum Assn. Awards In 1955 Safety Contest

In a report presented at the April 25-26 annual meeting of the Gypsum Association in Chicago, Lloyd Yeager, general manager, revealed that the gypsum industry has improved its safety record approximately 375 percent over the last 12 years. Despite a 100 percent increase in man-hours worked, there were only about half as many lost-time accidents in gypsum mills, mines, and quarries last year as in 1943, when an industry-wide safety program began.

The gypsum producers' safety performance in 1955 showed a 13 percent improvement over that of the previous year. Gypsum plants, which worked a total of 28,000,000 man-hours last year, had only seven disabling accidents for each 1,000,000 man-hours of work, compared with eight lost-time accidents in 1954 and 27 in 1943.

Awards were presented at the meeting to winners in safety contests conducted last year in 50 gypsum plants throughout the country. With a rating of 1.67 lost-time injuries, the United States Gypsum Company plant at Fort Dodge, Iowa, won the trophy in Class A, which comprises plants in which 725,000 or more man-hours are worked in a 12-month period.

Among Class B plants, which worked from 542,000 to 725,000 man-hours, United States Gypsum's mill at Philadelphia, Pa., was the winner, with a 1.39 rating.

Nine plants—two in Class C (290,000 to 542,000 man-hours) and seven in Class D (less than 290,000 man-hours)—reported no lost-time accidents for the entire year. In both of these classes, the trophy went to the plant working the most man-hours, and plaques went to the rest.

A record of over 2,000,000 man-hours without a single lost-time accident was established by the Sigurd, Utah, plant of the Certain-teed Products Corporation, which won the Class C trophy for the third straight year. In this group, the Heath, Mont., plant of the United States Gypsum Co. also had an accident-free record.

Winner among the Class D plants was that of the United States Gypsum Co. at Sigurd, Utah. Perfect scores in this group were also achieved by the following: U. S. Gypsum's plants at Milwaukee, Wis., and Grand Rapids, Mich.; the Celotex Corporation's plants at Fort Dodge, Iowa; Kaiser Gypsum's plant at Redwood City, Calif.; and Ideal Cement Company's plants at Portland, Colo., and Hanover, Mont.

A trophy was also presented to Certain-teed's Class B plant in Akron, N. Y., for having made the most notable progress in accident-prevention. This plant reduced its accident-frequency rate from 18.7 in 1953 and 36.8 in 1954 to 1.71 in 1955.

## Foreign Cement Manufacturer To Form Canadian Subsidiary

Officials of the Societe Anonyme des Chaux et Ciments de Lafarge et du Teil, an international cement manufacturing company with headquarters in Paris, France, have announced plans to establish a Canadian subsidiary in Vancouver, B. C.

The subsidiary company, Lafarge Cement of North America Ltd., has acquired a 50-acre site at the foot of No. 9 Road, Lulu Island, for the construction of a $13,000,000 plant.

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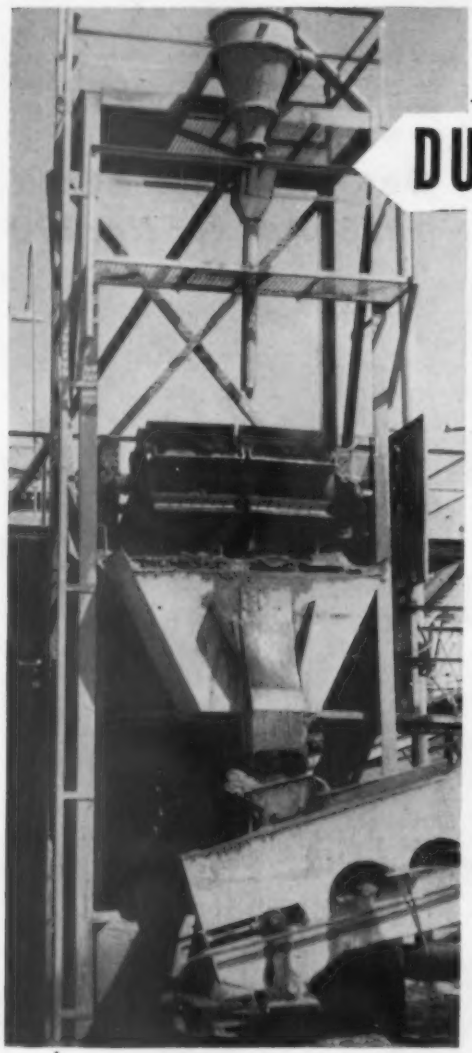
FRANK L. BEGGS has been appointed production manager of the Carbola Chemical Company, Inc., Natural Bridge, N. Y. Mr. Beggs had served previously as mining and quarry superintendent at the Coplay Cement Manufacturing Company, Coplay, Pa.

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**Magically Extracts Clean, Fine Sand from Drag Overflow**

● As its pit went deeper, Century Rock Products, El Monte, Calif., encountered lessened amounts of required fine sands. To correct the deficiency, the firm installed a 25-in. DURACLONE to extract the precious fines it had been losing in the waste overflow from a drag-type classifier.

● Using a 4-in. pump to force the pulp to the DURACLONE, mounted high above the discharge end of the drag (see picture), recovery averages about 5 t.p.hr.

● DURACLONES are completely rubber-lined for long life and are fitted with special spirals to gain velocity and speed the cyclonic separating action for maximum underflow recovery. Sold with an unqualified guarantee of performance when installed as directed. Available in sizes to handle up to 800 g.p.m. input.

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# NEW International® Payhaulers

for years a leader in the manufacture of heavy-duty construction equipment, International now offers you the same fine engineering and rugged dependability in

## OFF-HIGHWAY HAULERS

MODEL **95** 24 TONS

TWO **ALL NEW** MODELS

MODEL **65** 18 TONS

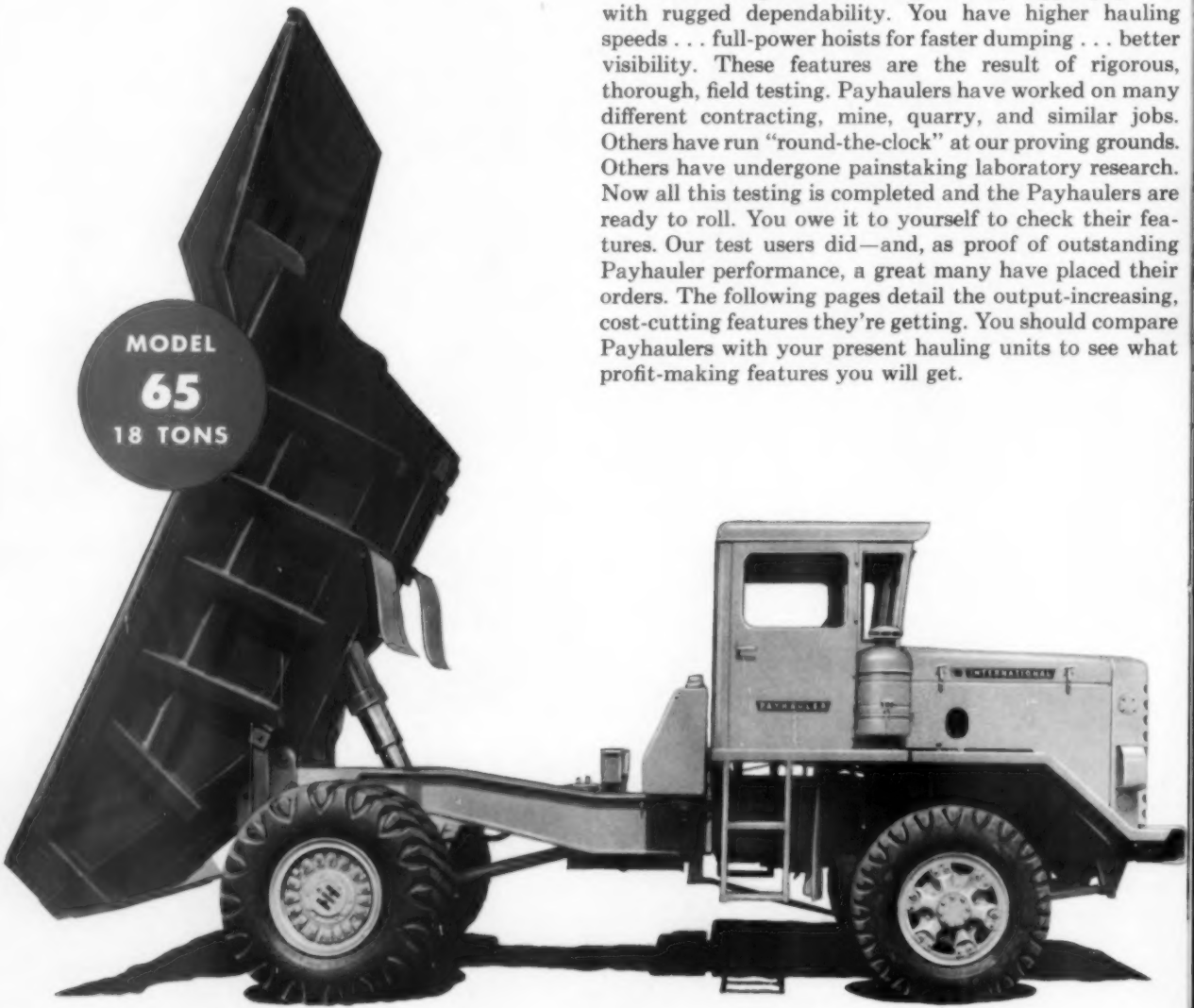
NEW RUGGEDNESS - POWER - COMFORT - ECONOMY

# Announcing the NEW

## Designed with features you asked for

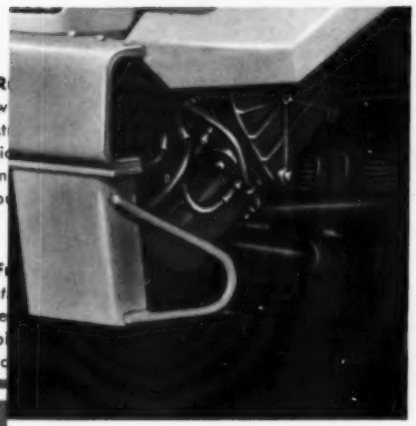
**250-335 HP Turbo-Charged Diesel Engines**
**Rugged, Welded, All-Steel Frame**
**Full-Floating Axles Planetary Drive**
**Speeds to 38 MPH**
**Power Shift Transmission**

Hundreds of contractors, mine owners, quarry operators, and other equipment users told our engineers what they needed in an off-highway hauler. Their suggested design features have been carefully built into the new International Payhaulers. In these rugged, all-new, rear-dump haulers, you have greater horsepower-to-payload weight ratios than are available in most other off-highway trucks. You have stronger main frames to carry bigger payloads with rugged dependability. You have higher hauling speeds . . . full-power hoists for faster dumping . . . better visibility. These features are the result of rigorous, thorough, field testing. Payhaulers have worked on many different contracting, mine, quarry, and similar jobs. Others have run "round-the-clock" at our proving grounds. Others have undergone painstaking laboratory research. Now all this testing is completed and the Payhaulers are ready to roll. You owe it to yourself to check their features. Our test users did—and, as proof of outstanding Payhauler performance, a great many have placed their orders. The following pages detail the output-increasing, cost-cutting features they're getting. You should compare Payhaulers with your present hauling units to see what profit-making features you will get.

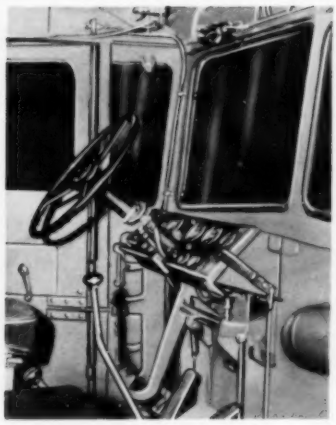


# Designed for operator comfort easier operation

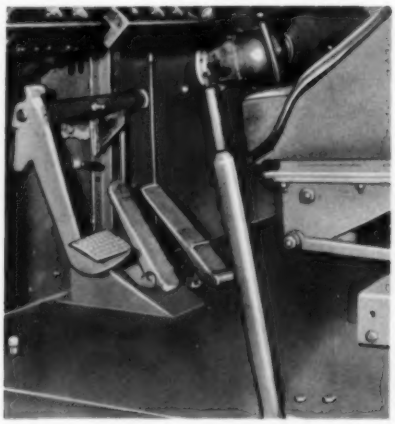
**Driver looks through** giant windshield, has picture window vision ahead and to both sides. When backing into close quarters, he need only open door and look around; offset cab gives unobstructed view to rear. Vents at top, bottom, and rear of cab provide a cool "office" for the operator.



**Power Steering.** No broken thumbs in the new International Payhaulers! Hydraulic boost gives operator power-steering control on haul roads—effortless steering when spotting under shovels.



**The Driver "Takes It Easy"** in the comfort-designed Payhaulers. He sits in a leather-covered, bucket-type, fully-adjustable seat. Jars and jolts are cushioned through compression spring, hydraulic shock absorber. He handles center-grouped, easy-to-reach controls. Clean floor with suspended brake pedal, handy hoist lever location make the operator's job even easier.



**Accessible Service Checks.** Outside mounting speeds air cleaner servicing. Inspection port in hood permits ready access to oil dip stick and filler pipe. Lightweight aluminum side sheets are easily removed for engine inspection.

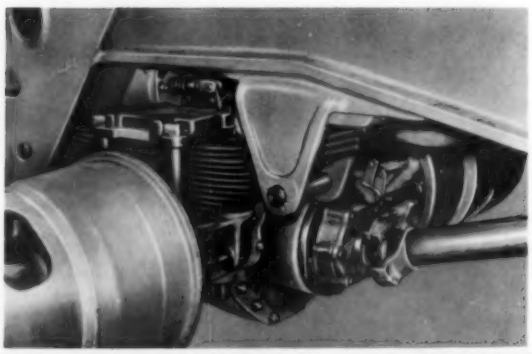
**Full Day's Fuel Supply.** There's no need to slow down a Payhauler job for refueling. These big haulers pack 125 gallons, enough fuel for a full day's operation on most jobs. Filter-type breather caps and built-in strainers help keep fuel clean and grit-free.

# International® Pa

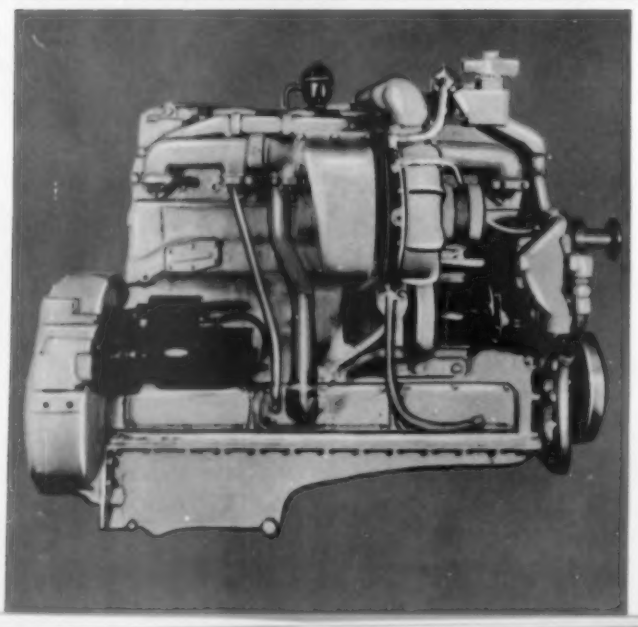
## Rock-rugged

**Rugged Frame.** Built of heavy-duty welded and conventional "I" beams with web thicknesses of ½ and ¾ inches, Payhauler main frames have the strongest section modulus known of any off-highway truck. Rear-frame section of rolled "I" beams is held rigid by tubular torque and hoist mounting members. Front frame sections flex with shock loads through channel bumper torque member.

**Free-Floating Springs.** *From the ground up, Payhaulers pack extra strength for outstanding performance on rugged jobs.* Semi-elliptic, multiple leaf, free-floating springs effectively "swallow" the shocks of loading from big shovels and of high-speed hauling over rough ground. Heavy-duty, radius rods keep springs and axles in position.



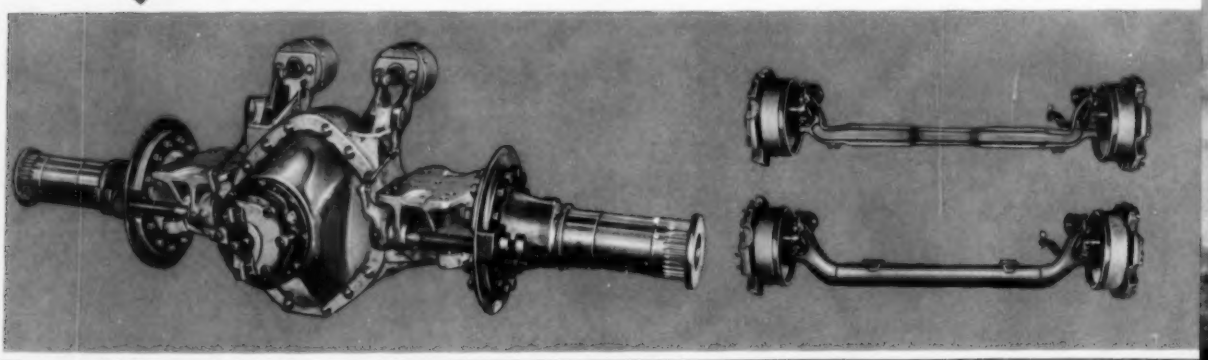
## Pay-off powered

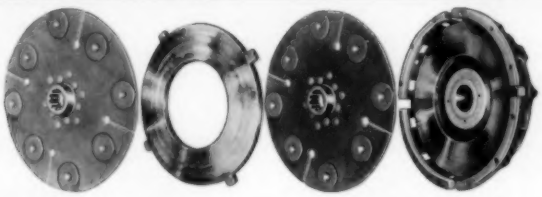


**Both the "65" and "95" Payhaulers** have more horsepower per struck yard than any other truck in their size class. The 24-ton, 16-yard "95" is powered by a 335 hp diesel . . . the 18-ton, 12-yard "65" is powered by 250 hp engine. Turbo-charging keeps power high, weight low, reduces fuel consumption 10% or more. Large radiator (below) with 1425 sq. in. of area plus powerful 32-inch fan insure proper engine cooling under all job conditions. Suspended on four large rubber mounting pads, the Payhauler radiator is protected against shock.

# haulers

**Sturdy Axles.** Durable axles help Payhaulers carry 36,000 to 48,000 lbs. smoothly, comfortably at speeds up to 38 mph. Note the massive differential housing with in-built spring mounting pads. Heavy-duty, rear axle housings bolt to the differential to provide top load carrying capacity. Front axles are equally sturdy—of forged or tubular design.



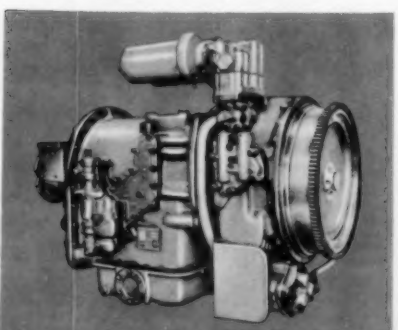


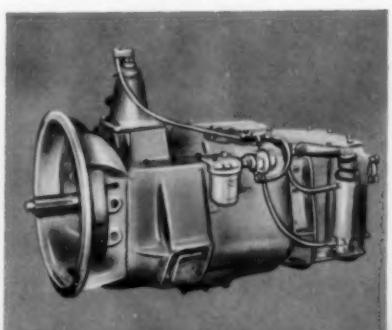
**Cerametallic Clutch.** In gear-drive models, cerametallic clutch facings virtually eliminate over-heating. This clutch, made of heat-defying material, needs fewer adjustments, gives longer life, smoother action than any other clutch in the off-highway truck field.

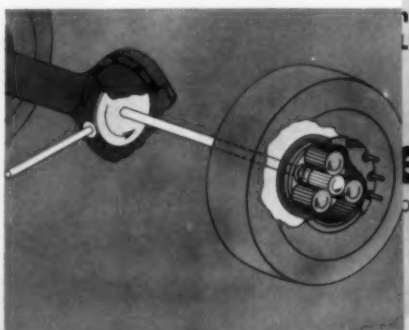
**Torque Converter.** The 24-ton Model 95 Payhauler is available with a 4-speed Torque Converter transmission for smooth speed changes from 4.8 to 38 mph. A lock-up clutch for direct drive performance and a Torqmatic brake system are standard with the versatile Torqmatic transmission. No other truck provides these features as standard equipment.

**Conventional Transmission.** You have a choice in the "65" Payhauler of a 5 or 10-speed geared transmission to fit job conditions—speed ranges are from 3.5 mph to 36.5 mph for either. In the "95" Payhauler, a 9-speed transmission provides an excellent range of speeds from 2.6 to 37.2 mph. Operators especially like the single lever air-assisted shift control.

**Planetary Final Drive.** Both Payhaulers translate engine power into big load handling capacity through a rugged differential to planetary drive wheels. Sun gear is integral with full-floating axles for greater strength and simplified maintenance.







# 4 RUGGED BODIES meet all hauling needs

Payhauler bodies are all welded, reinforced steel designed with oak fill to cushion shock loads. Inside floor and side sheets are durable Manten steel. For the Models "65" and "95", you can get a rugged quarry body—for the Model 95, two standard bodies (heated or unheated) are available to fit any job condition or material.

| BRIEF SPECIFICATIONS | Model 65 | Model 95 |
|---|---|---|
| Capacity | 18 tons | 24 tons |
| Engine hp | 250 | 335 |
| Transmission | 10-speed gear<br>5-speed gear | 9-speed gear<br>Torque Converter |
| Steering | Hydraulic | Hydraulic |
| Weight—Gross with Payload | 76,160 lbs. | 96,220 T.C. |

Specifications Subject to Change Without Notice

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## Construction Equipment

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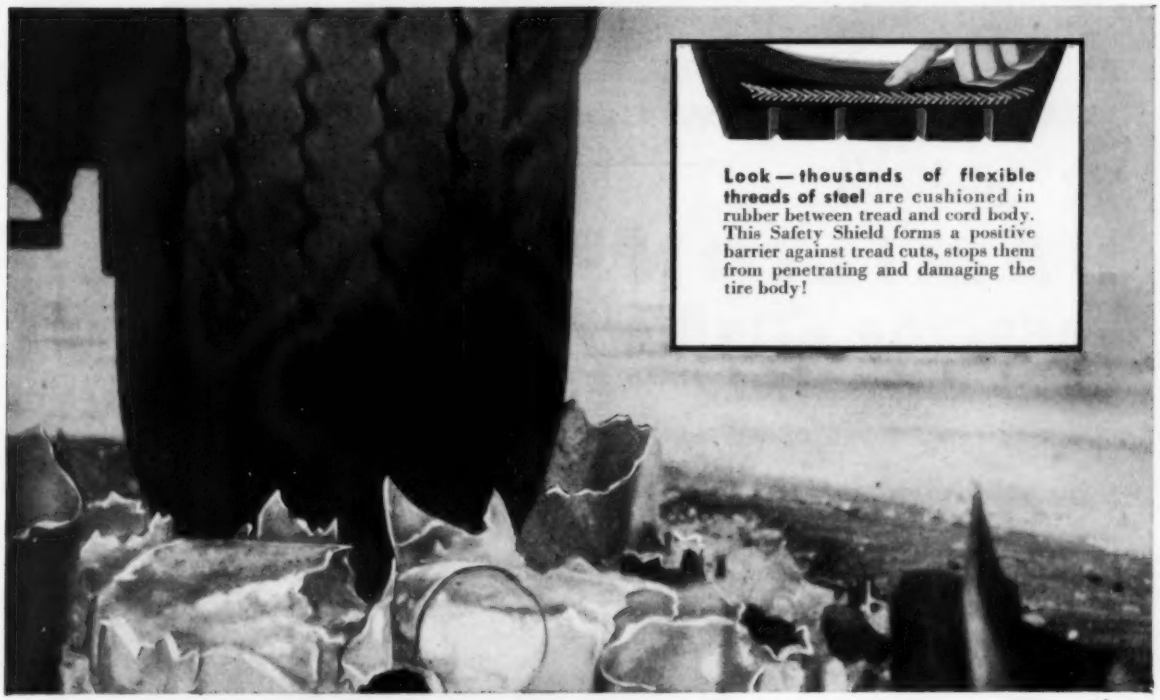
A COMPLETE POWER PACKAGE: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines.

# Tread Cuts Are Stopped

## by new exclusive SAFETY STEEL SHIELD


Look — thousands of flexible threads of steel are cushioned in rubber between tread and cord body. This Safety Shield forms a positive barrier against tread cuts, stops them from penetrating and damaging the tire body!

# U.S. ROYAL Truck Tires

You are looking at an entirely new kind of highway truck tire. It combines the strength of *steel* with full flexibility, light weight and soft ride—without increased inflation.

Because this new U.S. Royal is *invulnerable* to cuts and ruptures in the vital tread area, it gives you the longest, most trouble-free service in truck tire history. Because steel cord shields its carcass, it remains undamaged for more safe recapping, making it the most economical of truck tires.

You'll find new U.S. Royals like this cost *surprisingly little*. Ask your U.S. Royal Dealer now. And remember—you can specify them on the new equipment you buy!

***AND COMING SOON!***

**An all-new, all-wheel, all-job ON-AND-OFF-THE-ROAD TIRE— new U. S. Royal Super Fleetmaster with SAFETY STEEL SHIELD**

US RUBBER

**United States Rubber**

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## L. L. Hank, Crowell, Scifres Promoted to New Posts By Natl. Gypsum Company

National Gypsum Company directors have elevated Leonard L. Hank, former general production manager, to the post of vice-president of manufacturing, in charge of all the company's 37 plants and its mines and quarries.

Lewis B. Crowell, production manager for the firm's coastal gypsum division, was promoted to the post of general production manager for all the company's 12 gypsum plants. He will be succeeded in his former position by Robert E. Scifres, until now manager of National Gypsum's Shoals, Ind., plant.

Prior to joining National Gypsum in 1946 as manager of the firm's Kalamazoo, Mich., paper plant, Mr. Hank worked as a paper consultant and plant manager for two large paper manufacturers. In 1951 he was promoted to production manager in charge of all National Gypsum's paper plants. Two years later the firm's Mobile, Ala., insulation board plant was added to his duties.

Mr. Crowell worked for three years in the marine division of a leading gypsum producer and from

L. L. Hank

1939 to 1953 served in the company's production division. He joined National Gypsum in 1953 as an assistant production manager.

Mr. Scifres joined National Gypsum in 1942 as electric shop foreman of the Bluebonnet, Tex., ordnance plant which National Gypsum

Lewis B. Crowell

built and operated for the government during World War II. After service at the company's Mobile and New York City plants, in 1952 he was named assistant production manager in the home office. He subsequently became production manager.

---

General Portland Cement Co., Chicago, Ill., has announced plans for the construction of a new plant in Southeast Florida. Capacity is to be 1,250,000 bbl. per year.


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# You get more Work-ability with "Eucs" in Mines and Quarries

***Rear-Dump "Eucs" fit any operation . . . 10, 15, 22, 34 and 50 ton capacities.***

Rear-Dump Euclids are built for long life on the toughest jobs. Their simple, rugged construction pays off in less down time for servicing and repairs . . . more work-ability day after day . . . as proved on hundreds of mine, quarry and industrial operations for over twenty years.

There are 5 models with rated payload capacities of 10, 15, 22, 34 and 50 tons. Engines from 128 to a total of 600 h.p. . . . top speeds with full payload up to 36 m.p.h. . . . 5 and 10 speed standard transmission or Torq-matic Drive . . . semi-rigid or spring mounted drive axle . . . standard or quarry type bodies.

Compare Rear-Dump Euclid performance with your present equipment before you replace or add to your hauling fleet. Your Euclid dealer has helpful facts and figures that show how "Eucs" can cut mine and quarry hauling costs and why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS, Cleveland 17, Ohio

# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

## Manske Follows Sanderson As Natl. Gypsum Chief—New Policy Board Created

Melvin H. Baker, chairman of the board, National Gypsum Company, has announced the election of Fred A. Manske as president of the company, succeeding Lewis R. Sanderson, who has retired after serving as president since 1951.

Lewis R. Sanderson

Fred A. Manske

Wells F. Anderson

Wells F. Anderson, operations vice-president, has been elected a director, filling the vacancy created by Mr. Sanderson's retirement. Mr. Anderson was also promoted to the position of senior vice-president.

The creation of a new National Gypsum policy board composed of the president and the two senior vice-presidents, Mr. Anderson and John W. Brown, vice-president in charge of marketing, also was announced.

Mr. Manske, a production expert, served in the sales, research, engineering, and manufacturing divisions. He has been executive vice-president of the company since 1954.

Mr. Anderson, a veteran of 28 years in mining and manufacturing, has been in charge of all the company's plants, mines, and reserves, and its purchasing and transportation divisions since 1954.

Mr. Brown, a director and senior vice-president since last December, joined National Gypsum in 1935 as a salesman. He has served as a district sales manager, general sales manager, and vice-president in charge of general sales.

## Canada Crushed, Cut Stone Honors R. G. L. Harstone, President for 35 Years

After 35 years of service with the Canada Crushed and Cut Stone Company, Hamilton, Ont., Canada, Ross G. L. Harstone has retired from his post as president of this firm. He will be succeeded by D. H. Henderson.

At a dinner given in honor of Mr. Harstone, N. M. Peech, chairman of the board of the company, stated that the retiring official had seen stone production at the plant grow from about 150,000 tons per year to more than 1,000,000 tons.

Mr. Harstone was educated at Lindsay Collegiate Institute and Toronto University, and then entered the construction and engineering field. He joined the Canada Crushed and Cut Stone Company in 1922 after having served overseas in World War I. He was a director of the National Crushed Stone Association for more than ten years and is now regional vice-president of the British Commonwealth Section (Canada, Great Britain, Australia, New Zealand, and South Africa). Mr. Harstone has been for 20 years a director of the Canadian Construction Association, serving as vice-chairman and chairman of the Manufacturing and Supply Section and as honorary secretary and treasurer.

In addition to his business affiliations, Mr. Harstone has devoted much of his time to civic undertakings. He served as chairman of the Hamilton Harbour Commission and as a member of the Niagara Parks Board.

### Diamond Portland Cement Co. Launches Expansion Program

The Diamond Portland Cement Company, Middle Branch, Ohio, is currently engaged in an expansion program which will include a 3,500-bbl.-per-day Allis-Chalmers Lellep system of producing cement clinker from a kiln feed in the form of pellets. This is the first phase of a long-range program which is to be carried out in three stages.

W. R. Bendy, cement engineers, St. Louis, Mo., developed the overall program. Structural design of all buildings, foundations, silos, and supervision of construction and plant layout of the present expansion are being handled by the Macdonald Engineering Company, Chicago, in co-operation with Bendy engineers. According to James W. Macdonald, president of Macdonald Engineering Co., the new addition is expected to be put into operation by June, 1957.

Capacity of the crushing section will be increased by the addition of a 42- by 82-in. reversible impact crusher and two Allis-Chalmers vibrating screens. Two 10½- by 17-ft. dry grinding ball mills, also Allis-Chalmers units, will go into a new closed-circuit raw-grinding department. Existing raw-grind mills will be converted to clinker-grinding mills in this first stage of the expansion program. A completely new clinker-grinding department is planned later on.

The 3,500-bbl. system will include a 12½- by 75-ft. A.C.L. grate, a 12½- by 160-ft. A.C.L. rotary kiln, a 6- by 100-ft. Air Quenching cooler, a master control panel, and two 15-ft. diameter pan-type pelletizers. All motors, motor generator sets, and related major electrical items are also being furnished by Allis-Chalmers.

# with Gulf Lubricants and Fuels

## on the job at Macon Quarries, Macon, Georgia

Helping quarry operators keep equipment working smoothly and efficiently is an important part of Gulf's business—made possible by a complete line of high quality lubricants and fuels, plus practical petroleum engineering service.

Gulf lubricants provide an extra margin of protection—prevent excessive wear and keep maintenance costs down. Gulf fuels burn evenly and completely—leave fewer harmful engine deposits and contribute to top engine performance.

And Gulf Sales Engineers are always available to assist you on any problem involving a petroleum product. Try this crack combination of quality products, helpful engineering counsel, and prompt delivery service in your operation.

Consult the telephone directory for the number of your local Gulf office, or write on your company letterhead to the address below.

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# VIBRATORY FEEDER

**No other vibratory feeder like this! Eriez Magnetic "know-how" brings you the first complete line of Electro-PERMANENT Magnetic Feeders operating at 3600 CPM directly off an AC line. Just plug or wire them in.**

## NO RECTIFIER NEEDED

**AND LOOK AT THESE ADDITIONAL HI-VI ADVANTAGES**

**Lower Maintenance and Operating Costs . . . Longer, Trouble-Free Service . . . Versatile Units Provide Broader Operating Ranges with Less Power Consumption . . . HI-VI units are Compact, Lightweight, Easily Installed, never need realigning . . . No Sliding or Rotating Parts to Wear, No Lubricants Needed . . . Noise Factor is reduced, working conditions improved . . . New type "Double Action" drive provides high operating efficiency with low operating cost . . .**

ERIEZ HI-VI

*Pat. Pending*

**VIBRATORY FEEDER**

Rapidly vibrating action moves bulk products in a smooth, even flow. Permits measured feed, from ounces to tons per hour. Eliminates pile-ups, spasmodic feeding. Extremely valuable for weighing, batching and proportioning operations. **Eriez HI-VI Vibratory Feeders** handle practically every type of bulk material . . . hot, damp, dusty, lumpy, abrasive, etc. Allows highly controlled feeding at greatly reduced costs.

Also offered is **Eriez HI-VI Unit (Bin) Vibrator.** Keeps materials flowing smoothly and evenly through hoppers, bins and chutes. Eliminates pile-ups, arching, bridging and sticking of dry materials . . . in lump or powdered form. Compact unit is easily installed.

ERIEZ HI-POWR MAGNETIC SEPARATORS

*These products are the latest developments of Eriez Manufacturing Co., world famous producer of permanent-powered Magnetic Separators.*

**For full information on new HI-VI Vibratory Equipment, write Eriez Manufacturing Company, 113 F Magnet Dr., Erie, Pa.**

John N. Robertson (left), national president of the American Road Builders' Association, congratulates Maj. Gen. Louis W. Prentiss (U.S.A.ret.), who became executive vice-president of the association on May 1. Headquarters of A.R.B.A. are in Washington, D. C.

## $6,100,000 Plant, Expansion Boom Arkansas Cement Industry

Construction of a $6,100,000 cement plant in Foreman, Ark., is being financed by a group of Texas industrialists. Kennedy-Van Saun Manufacturing and Engineering Corporation is building the plant on a 1,710-acre site.

Scheduled for completion in January, 1957, the new plant will be operated by Kennedy-Van Saun for three years. The capacity of the plant will be 875,000 bbl. of cement per year.

Ideal Cement Company, Denver, Colo., is spending $6,000,000 for an expansion program which will double the capacity of its plant at Okay, Ark., to 2,600,000 bbl. per year.

## John M. Kinard Elected To Vice-President's Post On Riverside Cement Staff

John M. Kinard was recently elected vice-president and general manager of the Riverside Cement Company, Los Angeles, Calif. Mr. Kinard has been with the company since 1950. He is in charge of production operations at the Crestmore and Oro Grande plants of Riverside.

Mr. Kinard received his Bachelor's degree at Occidental College and his Master's degree at the Harvard Graduate School of Business. Prior to his employment with Riverside he was a member of the faculty of the Harvard Graduate School of Business for two years.

J. M. Kinard

The board of directors of the Kentucky Crushed Stone Association. Standing: W. O. Snyder, executive secretary; R. S. Waters, Waters Construction Company; Marlon King, Cedar Bluff Stone Company; Herbert Wells, Licking River Limestone Company; George Geoghegan, Geoghegan & Mathis; and R. A. Matthews.

Seated: Emil Berry, Jefferson County Stone Company; Margaret Smith, Central Rock Company; and J. Robert Thompson, Blanton Stone Company, Inc. Other board members not in the photograph include Herman Genet, Verne Morgan, W. E. Covington, R. E. Cooper, and Bert Paynter Jr.

## Production of Tri-Clad 55 Started in $7,000,000 Plant Of G-E at Schenectady

What is believed to be the world's most modern factory for manufacture of induction motors was unveiled in Schenectady, N. Y., on April 16 by General Electric's Medium Induction Motor Department.

O. F. Vea, general manager of the department, stated that the new facility was built at a cost of approximately $7,000,000. He said it was designed to meet today's rapidly expanding motor market which is expected to increase at least 75 percent, industrywide, by 1965.

Actually three plants under one roof, the new motor plant has made possible a production cycle of three 8-hour shifts on standard models of the 7½- to 30-hp. motors in the Tri-Clad 55* line. Formerly it took two weeks to produce these motors.

Standard models are manufactured in a straight-line flow on left and right assembly lines, and special motors are produced in a middle line which draws standard components from the other two.

Highlighted by many new and revolutionary manufacturing processes which have reduced to two the number of major hand operations involved, the facility is geared to meeting rising production demands in an expanding motor market.

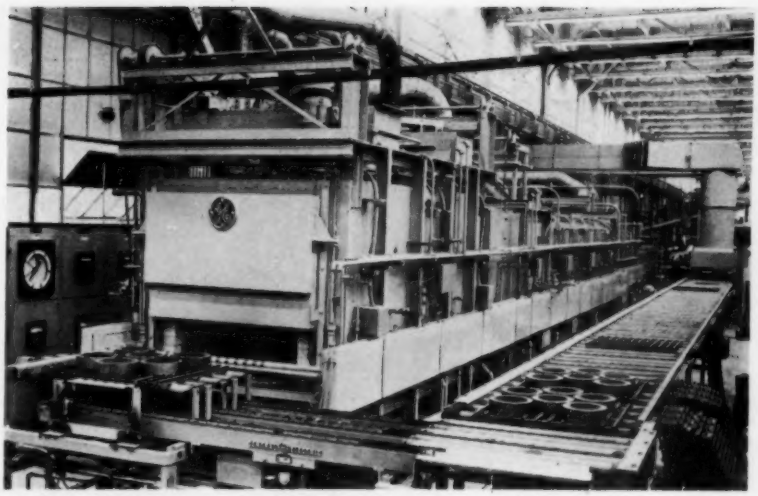
According to a statement released by Mr. Vea, despite the reduction in hand operations, the new plant employs more personnel than ever before. He attributed this to the department's ability to keep up with a rapidly expanding induction motor market.

Glenn A. Cook, manager of operations of the new plant, said the principal hand operations still in use on the two standard lines involve stator winding and a portion of final motor assembly. All other operations are performed on machines which function automatically—mostly in a series of progressive machining.

Designed from a "building block" approach, the factory was set up specifically for the manufacture of the Tri-Clad 55 line, introduced in 1954. The factory produces more than 100 standard models, plus a wide variety of special motors.

Motor parts progress towards final assembly and testing along roller-type conveyors, with an overhead suspension system employed as needed for the handling of materials and for special operations.

*Reg. Trade-mark of the General Electric Company.



Hundreds of pounds of rotor and stator punchings are annealed here every hour with only one pass through this furnace at the new G-E plant.

Streamlined materials handling has sharply increased the flow and production of the motors. Flexibility has been enhanced by placing all machines except the largest punch presses on movable mounts.

A unique feature of the standard lines is an array of automatically-operated punch presses stationed at the beginning of each production line.

In another fully automatic operation, wound stators are passed through three ovens in a dip-and-bake processing on a pre-set cycle of about six hours. They are progressively pre-heated, dipped into varnish, baked, given paint dip, baked again and finally given silicone dip.

The many testing operations demonstrate the great emphasis placed on quality control. All motors are tested automatically on a circular platform at the end of each standard line.

A previous production-line test for turn-to-turn failure, unbalanced resistance and high voltage is given at the point where the wound stators are prepared for the dip-and-bake processing. At regular intervals fully assembled motors are selected for additional testing. Along both standard lines and the special line all operators check their own work as it progresses toward final assembly. "Floating inspectors" also check the work at various stations.

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## Bolton Named Vice-President Of Ideal, Succeeding Winters

Harry B. Bolton was recently elected administration vice-president of the Ideal Cement Company by the firm's directors in special meeting. Mr. Bolton was appointed general sales manager last February, to succeed Robert W. Winters, who was promoted to administration vice-president. On the day he was promoted, Mr. Winters died unexpectedly in a Denver hospital.

Mr. Bolton will assume the position left vacant by the death of Mr. Winters, and in addition he will continue as general sales manager. He will be directly in charge of sales for the entire company and will assume responsibility for advertising, promotion and publicity, traffic, and the research and development department. Before he was promoted in February, Mr. Bolton was Ideal's southern regional sales manager, with headquarters in Mobile, Ala.

In addition to the promotion of Mr. Bolton, Ideal spokesmen announced that T. W. Rosebaugh had been named a vice-president of the company. Mr. Rosebaugh formerly served as Pacific region vice-president.

---

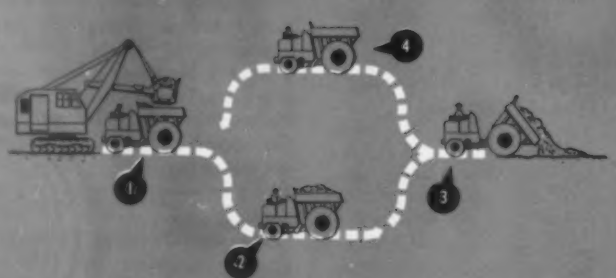
The Lone Star Cement Corporation, Bonner Springs, Kans., recently purchased a 40-ton, 0-4-0 diesel-hydraulic locomotive from the Baldwin-Lima-Hamilton Corporation, Philadelphia, Pa. The new locomotive is powered by a 6-cylinder, 300-hp. diesel engine.

---

Diamond Portland Cement Company announced that 1955 earnings increased 27.3 percent over 1954, to establish a new peak at $893,854, or $2.99 a share, compared with $702,143, or $2.35 a share, in the previous year. The earnings figures reflect the 2-for-1 stock split of December, 1955.

On this Dumptor shuttle operation, it's an up-hill haul all the way from floor of pit to top of ramp. The other half of this big production team is a Koehring 1½-yard 605 shovel.

## HOW TO *haul without turning*




1 Dumptor gets load, body forward, ready to travel.

2 Pulls away from shovel, body forward, ready to dump.

3 Dumps in one second, shuttles back for next load.

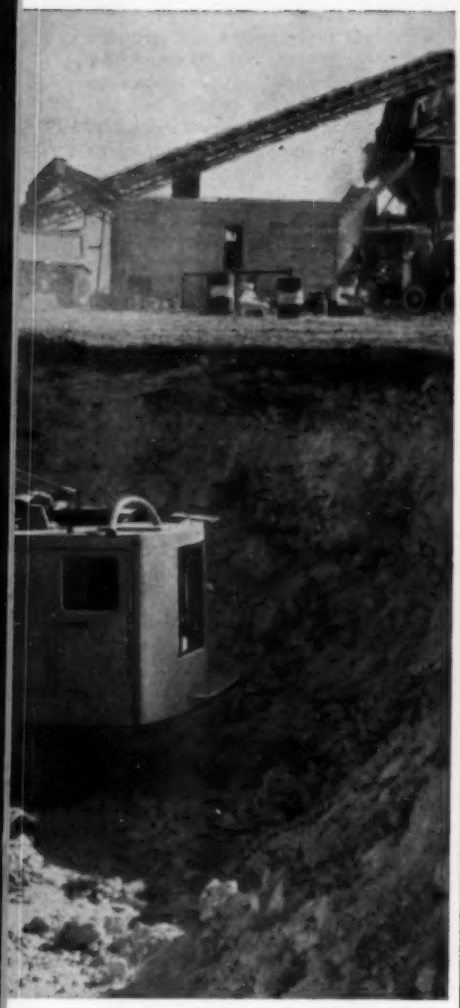
4 Returns to shovel in high gear, all *without turning.*

Shuttling between loading unit and dump area, Koehring 6-yard Dumptor travels round-trip *without turning.* It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

**Increases hourly output over 10%**

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return,

CK643



its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

### Dumps in one second

*Gravity-dumping* cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second*. Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor® advantages can mean in increased production and lower costs on your work. Call your Koehring distributor now.

**KOEHRING COMPANY**

MILWAUKEE 16 WISCONSIN

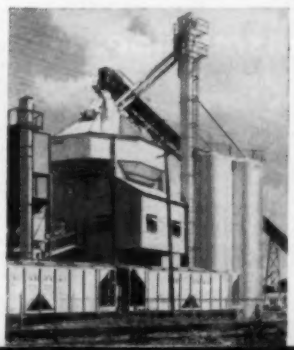
*Subsidiaries:* JOHNSON PARSONS KWIK-MIX

## "Repeater" automatically re-batches any mix selection

**At the turn of a dial and push of a button, this Johnson automatic Batch Controller selects any one of 120 different size and type batches of aggregates and cement. It weighs out any combination of materials you set up on the central dial-scale control panel . . . and automatically repeats any batch selections for a pre-determined number of times.**

**The electric-control, 120-mix-selector panel provides for concrete of various strengths in any combination of materials, in ½ to 2 cubic yard batches. For each size batch there are individual selections for 3 to 6-inch slumps. Dial system makes it easy to change from one mix selection to another. To get any size or type of batch, operator merely turns the selector dial, sets the "repeater", pushes the "start" button . . . and the plant weighs out fast, with pinpoint accuracy. During the batching cycle, a lock prevents accidental change of the mix selector.**

**Nine material weigh-dials on the control panel have individual pen-recorders. Exact weight of each batch is automatically graph-recorded. Johnson transit-mix plant shown here has: six 5000-lb. aggregate batchers (two with automatic moisture-compensators) . . . a 3000-lb. cement batcher with dual fill valves for selecting 2 types of cement . . . a 2000-lb. water weigh-batcher, and a 5-lb. (80-oz.) air entraining admix batcher. All are fully automatic.**



**Whenever you plan a new plant . . . or want to modernize an existing set-up, look into the increased efficiency you can get with Johnson equipment. You'll find your Johnson distributor is at your service . . . ready to help at any time.**

T9

**C. S. JOHNSON CO.** CHAMPAIGN, ILLINOIS
*Koehring Subsidiary*

# Are Packaging Advances Bypassing The Cement Industry?

By BRUCE BARTON
Vice-President, Percy Kent Bag Co.

DUE at least in part to the favorable sales situation in recent years, cement manufacturers have been putting little emphasis on their bag designs.

Meanwhile, in other less fortunate fields, manufacturers have been forced to rush all reinforcements into the battle for sales—including advertising displays on the sides of their packages.

Package design can be a potent sales factor. This was proved years back, on the shelves of new grocery supermarkets. Products which blossomed forth in new containers—with the design revamped to look cleaner, brighter, more modern and more distinctive—enjoyed an immediate and unmistakable sales boost.

The package definitely showed that it can do two things: *First,* convey an impression of quality that invites the viewer to buy. *Second,* help the viewer remember the product—a factor which is vital in building repeat sales business.

Recently there has been some discussion in the cement industry as to whether modernization of cement bag designs may not be timely. Even though it is not needed now to produce sales, it could help establish product identification. In more competitive days to come the firm which has accumulated this advantage of brand identity should be in a stronger position.

Problems of package design are not, of course, the same in any two industries. For example, the big selling point in chemical fertilizers is increased crop yields. This concept can be presented pictorially on the side of the bag. The viewer sees a field of lush crops and understands immediately that such crops can be his, too, if he will use a fertilizer with a certain formula—namely, the formula of the fertilizer in the bag.

However, when we try to transfer this approach to cement, a different technique is required in the picturization of the product. The formulas of all standard cements are about the same. What the manufacturer has to offer is the purity and uniformity of his product.

Product uniformity and purity are abstract ideas, not easy to convey by a printed design. This fact poses an interesting problem to the bag designer, but it is by no means insoluble.

Cement is the keystone of modern construction. It is universally considered a modern product. Hence it follows that the bag design might well carry out this modern concept.

An outstanding illustration of the cement manufacturer's plant can be most impressive. Such an illustration can be incorporated into a design which not only shows the plant to advantage, but with planned designing makes an attractive bag.

Alert bag manufacturers are revolutionizing bag designs in all industries, and we believe that cement offers many possibilities.

### Cement Companies Report Rise In Sales and Income in 1955

The trend in production, sales, and earnings of major cement companies in 1955 appeared to be rising.

Earnings of Ideal Cement Company jumped to $13,813,045, equal to $4.20 a share, for the period ended December 31, 1955. The full year earnings compare with $11,095,869, or $3.37 a share, in 1954. Cement shipments for 1955 were slightly more than 23,000,000 bbl., about 3,000,000 bbl. more than in 1954.

Net profits of the Lone Star Cement Company increased to $14,619,288 in 1955 from $12,626,077 in 1954. Sales last year amounted to $91,513,707, compared with the 1954 volume of $84,439,270.

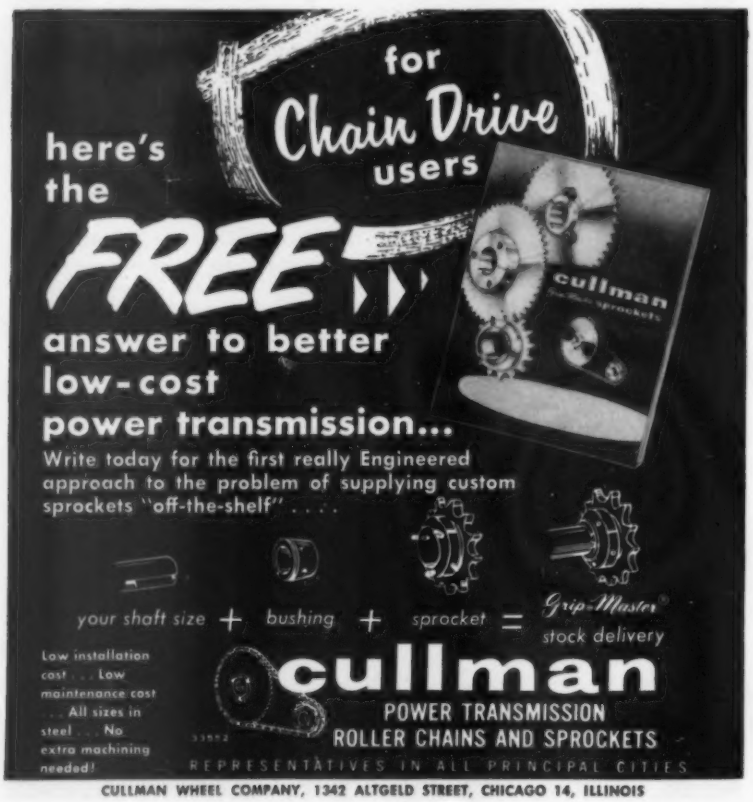
Lehigh Portland Cement Company reports a net profit of $11,262,207 for the year ended December 31, 1955, as compared with a $7,958,168 profit for 1954. Sales in 1955 totaled $70,894,796, an increase over the 1954 total of $62,065,122.

General Portland Cement Company's annual report showed a 16 percent rise in sales and a 20 percent increase in earnings in 1955. Sales totaled $38,906,148, compared with $33,443,661 in 1954. Net earnings after taxes were $8,195,780, setting a new high. Earnings in 1954 were $6,833,256. Based on 2,079,942 shares of common stock outstanding, 1955 earnings were equal to $3.94 a share, while 1954 earnings were $3.29 a share.

Penn-Dixie Cement Corporation reports net earnings for 1955 of $6,876,121, or $2.72 a share, an increase of 42 percent over net of $4,854,085 for 1954, or $2.24 a share. Net sales for 1955 amounted to $43,064,659 against 1954 sales of $31,834,755.

A 19.4 percent increase in net in-

(*Continued on page* 54)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for Chain Drive users
FREE
answer to better low-cost power transmission...
Write today for the first really Engineered approach to the problem of supplying custom sprockets "off-the-shelf" . . . .
cullman
your shaft size + bushing + sprocket = Grip-Master stock delivery
Low installation cost . . . Low maintenance cost . . . All sizes in steel . . . No extra machining needed!
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POWER TRANSMISSION ROLLER CHAINS AND SPROCKETS
REPRESENTATIVES IN ALL PRINCIPAL CITIES
CULLMAN WHEEL COMPANY, 1342 ALTGELD STREET, CHICAGO 14, ILLINOIS

# Only DODGE trucks are Chrysler-engineered

## to save *your* business real money!

### Dodge gives you top engine economy with exclusive Power-Dome V-8's!

Out on the job is where a truck earns its keep—and that's where famous Chrysler engineering pays off for Dodge truck owners! Here's how Dodge can help *you* save . . .

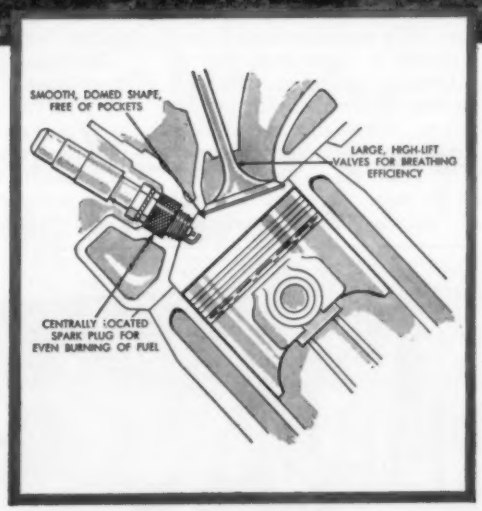
**Low maintenance.** You get thousands of added miles of like-new engine performance because combustion chambers have no "pockets" to accumulate carbon.

**Greater gas economy.** Short-stroke Power-Dome V-8 engines deliver full power on *regular* gas, give you more miles per gallon.

**Shortest turning radius.** Gear-before-axle steering makes turning easier, saves time.

**Biggest, most comfortable cabs.** Driving is safer, less tiring.

Add it all up, and add in the fact that Dodge trucks are priced right down with the lowest. You get more truck for your money—and any Dodge dealer can prove it to you!


SMOOTH, DOMED SHAPE, FREE OF POCKETS
LARGE, HIGH-LIFT VALVES FOR BREATHING EFFICIENCY
CENTRALLY LOCATED SPARK PLUG FOR EVEN BURNING OF FUEL

Only Dodge offers Power-Dome V-8 design. This dome-shaped combustion chamber burns fuel more efficiently; saves gas, maintenance.

**GET YOUR DODGE DEALER'S DEAL BEFORE YOU DECIDE**

# DODGE TRUCKS WITH THE *FORWARD LOOK*

## Three Gulf States Record Increased Mineral Output In Advance 1955 Summary

According to a preliminary summary by the U. S. Bureau of Mines, the total 1955 value of mineral production in Mississippi established a new record of $120.2 millions, 10 percent greater than the 1954 record of $108.7 millions. Mineral fuels accounted for 90 percent of the total mineral value, with nonmetallic minerals the remaining 10 percent. There were no metallic minerals reported in 1955. Crude oil was the principal mineral in value, accounting for 77 percent of the total value, followed by natural gas (10 percent), sand and gravel (4 percent), cement and clay (3 percent each), and natural gas liquids (nearly 3 percent).

Cement production in 1955 exceeded that of 1954 as active demands for concrete from industrial, residential and highway construction continued unabated.

Mississippi clay production in 1955 was greater than 1954 as demand for building and heavy clay products continued at high levels. Total clay included: ball clay, bentonite, fire clay, Fuller's earth and miscellaneous clays (common and shale).

Demand for paving and structural sand and gravel remained at high levels in 1955, resulting in a 5 percent increase in value from that of 1954. Output was estimated at 5.3 million tons, valued at $4.4 million.

The total estimated value of Louisiana minerals established a new record of $1.1 billions in 1955, a $107 million increase over the previous record value in 1954, according to the Bartlesville, Oklahoma, office of the Bureau of Mines. Mineral fuels accounted for 92 percent of this value, with the nonmetallics being responsible for the remainder. No metallic minerals were reported.

Cement production and value increased in 1955 as industrial and residential construction and highway projects continued unprecedented demands for cement. The Ideal Cement Co. announced a $3.5 million expansion program at its Baton Rouge plant and a $1.4 million expansion at its New Orleans plant.

The 1955 clay production of Louisiana was estimated at 1.6 million tons, the major portion being miscellaneous clay and used mostly for heavy clay products, lightweight aggregate and cement. Some bentonite was reported.

Salt production, reported from five parishes, increased to 3.1 million tons valued at $10.2 millions. Salt in brine constituted the largest part of this production, followed by rock salt.

Production of sand and gravel was estimated at 8.6 million tons, a 9 percent increase over that reported in 1954. Structural and paving uses consumed most of the output.

Sulphur production in Louisiana established new records in 1955 when 2.1 million long tons valued at $57.9 millions were reported.

Preliminary figures reported by the U. S. Bureau of Mines indicate that the total value of mineral production in Texas established a new record in 1955 over the previous 1954 when $4.1 billion was reported. Mineral fuels increased 11 percent in value over 1954, to $3.8 billion, accounting for 93 percent of the state's total mineral value, nonmetallic minerals increased 7 percent, to $286.2 million, amounting to 7 percent of the total value, and metallic minerals rose 5 percent to $6.2 million, contributing a fraction of a percent of the total value. The 5 principal minerals in the order of their value were crude oil, natural gas, natural gas liquids, sulphur and cement.

The quantity and value of cement shipments in 1955 increased over those of 1954, and a number of expansion projects were initiated. These included the installation of a 450 foot kiln by the Gulf Portland Cement Division of the Ideal Cement Co. at its plant near Houston; installation of a 425 foot kiln by the General Portland Cement Co. at its plant near Dallas; expansions at Dallas and Houston by the Lone Star Cement Corp.; and the construction of a new plant at Echo by the Texas Portland Cement Co. The Longhorn Portland Cement Co. completed the expansion of its plant near San Antonio.

The 1955 clay production in Texas approximated that of 1954. Miscellaneous clay accounted for the major portion of the production and was used for cement, brick and heavy clay products. Considerable quantities of bentonite, fire clay and Fuller's earth were also produced. Fire clay was used for heavy clay products and for refractories.

The 1955 output of lime in Texas increased in both quantity and value over 1954. Lime was produced at 11 plants operating in 7 counties in 1955, and was used for industrial, chemical and building purposes.

Production of salt increased slightly over 1954, with the major part of this production in the form of brine.

Sand and gravel production in 1955 increased considerably in quantity and value over the preceding year. Most of this material was used for structural, railroad ballast and paving purposes.

Limestone accounted for nearly 70 percent of the output of marble, limestone, sandstone and miscellaneous stone in 1955. Most of the limestone, sandstone and miscellaneous stone was used for structural and paving purposes with road metal and railroad ballast consuming important quantities.

Production of Frasch sulphur increased in 1955 after declining for the previous 2 years. Construction of a Frasch plant by the Standard Sulphur Co. near Freeport neared completion.

• A steady stream of crushed stone—averaging 100 t.p.h.—pours from this modern crusher at the plant of the J. T. Leonard Company near Mediapolis, Iowa. The main hammer mill is shown here. Powered by an International UD-1091 engine (center), this unit produces agricultural limestone and crushed stone for roads and the chemical industry. The Leonard company, which has operated the plant at the site for about 13 years, has its headquarters at Columbus Junction, Iowa.

CARBIDE INSERT? or MULTI-USE?
LOCATION: Granite Falls, Washington.
OPERATING CONDITIONS: Drilling of blast and dowel holes in hard, seamy granite.

# TIMKEN® carbide insert bits give more hole per bit through blocky granite on Granite Falls Fishway

THE Scheumann & Johnson Company of Seattle had to drill blast and dowel holes in extremely hard, seamy granite when constructing baffles for the world's largest "vertical-baffle" salmon fishway at Granite Falls, Washington. For highest economy drilling through this hard ground, they chose Timken® *carbide insert* bits for the job.

Timken carbide insert bits permitted high speed drilling with minimum bit changes. And the job superintendent reports that the Timken carbide insert bits made it possible to drill out full increments of drill steel.

But Timken carbide insert bits may not be the best answer for *all* your drilling problems!

In softer, less abrasive ground, Timken *multi-use* bits, correctly controlled and reconditioned, give you the lowest cost per foot of hole when you can drill out full increments of drill steel.

Both types of Timken bits are interchangeable in the same thread series. And a wide range of different Timken bits fit the same drill steel. When the ground changes, you can switch bits quickly and easily, right on the job.

The Timken Rock Bit Engineering Service can offer you over 20 years of experience in recommending the best bit for the job. We'll be happy to help you. Write: The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

*your best bet for the best bit ... for every job*

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

# Pennsylvania Agstone Producers Hold Annual Division Meeting

David K. Shroyer, sales manager, H. E. Millard Lime & Stone Co., Annville, Pa., newly-elected chairman of the Agricultural Limestone Division of the Pennsylvania Stone Producers Association.

ON March 22 the Agricultural Limestone Division of the Pennsylvania Stone Producers Association held its annual meeting at Harrisburg, Pa. The Governor's Room of the Hotel Penn-Harris was the locale of the gathering which was attended by about 50 members and their guests.

In opening the session, F. Edward George, division chairman, commended the group for its efforts on behalf of the entire agricultural limestone industry in the state of Pennsylvania, as well as for the association and division membership. Administrative business was brought up early in the meeting, and reports were tendered by the nominating committee chairman and the division's secretary.

The nominating committee reported the following nominees for division offices: D. K. Shroyer, chairman; Fred E. Roberts, vice-chairman; H. M. Binkley, treasurer; and H. H. Wagner, secretary. Board members were nominated as follows: Walter Hamme and H. H. Snyder, eastern section; W. O. Faylor and D. Fyock, central section; and R. Hammett and E. A. Snyder, western section. All nominees were unanimously elected.

In his report as secretary, H. H. Wagner commented on the changes recently witnessed in the industry. It was pointed out that not many years ago the Agricultural Conservation Committee in meetings with this organization's representatives would propound the idea that if the operators would see to an increased aglime production, the committee would devote its efforts toward obtaining farmer participation. Under this system the county conservation committeeman contacted the farmers, signed them up under the program, and usually followed through to see that the farmers received their lime when and as desired. Producers were involved only to the extent that they received delivery and spreading instructions from the county offices, and subsequent to spreading, billed the U. S. Department of Agriculture.

Mr. Wagner compared the foregoing to the situation as it exists today. Farmers are no longer contacted by the county committeeman, but must instead go to the county offices to sign up under the program and furnish soil samples to the county farm agents. Since this is a time-consuming arrangement, a frequent result has been that farmers put off this activity until it is too late to accomplish liming for a given planting season.

The secretary stated further that due to the withdrawal of the Department of Agriculture from the direct promotional work in selling the farmers, it is now incumbent upon the agstone suppliers and their salesmen to get the farmers enrolled in the program and aid in the soil sampling procedures. Mr. Wagner added that while this would undoubtedly increase the cost per ton of lime delivered and spread on the farm, such an increase is small compared to the benefit which the farmers would derive from increased use of the product; and at the same time the aglime business built through this sales effort would have a much more permanent nature than that due to the former ACP activities.

It was brought out during a discussion on the amount of unexpended ACP funds for the 1955 program that approximately $500,000 remained unspent. This matter led to a motion that this organization go on record as urging all producers to contact their local ASC county officials to ascertain whether funds allocated for use in any particular county had been overspent. If this proved true, it was recommended that the county officials be urged to apply to the state committee for a transfer of a portion of the unused state funds. This motion was unanimously accepted.

Included among a number of subjects discussed during the day were such matters as the minimum wage law, liming and fertilization of grasslands, the vocational - agricultural program, the value of liming in relationship to soil structure, and a statistical report on the use of ACP funds.

L. F. Merriott, Pennsylvania State University, commented that grasslands in the state consisted of over 5,000,000 acres as contrasted with 3,500,000 acres of other types of farming land. Noting that in 1955 the records indicate that only about one-third of the total lime requirements of the soil were met, Mr. Merriott stated that the use of limestone is the first step to be considered in any fertility program.

In the report by James Fink, district vocational-agriculture supervisor for Butler, Beaver, and Lawrence counties, it was indicated that, statewise, there are about 12,000 future farmers enrolled. A recent survey has shown that more than 75 percent of these students continue in the farming industry after leaving school.

Joseph D. Puntel, district representative of the Wage and Hour Division of the U. S. Department of Labor, spoke briefly on the effect which the $1 minimum and other recent changes would have on the agstone industry, and strongly advised industry members to avail themselves of assistance at district wage and hour offices whenever faced with problems in the application of the wage laws.

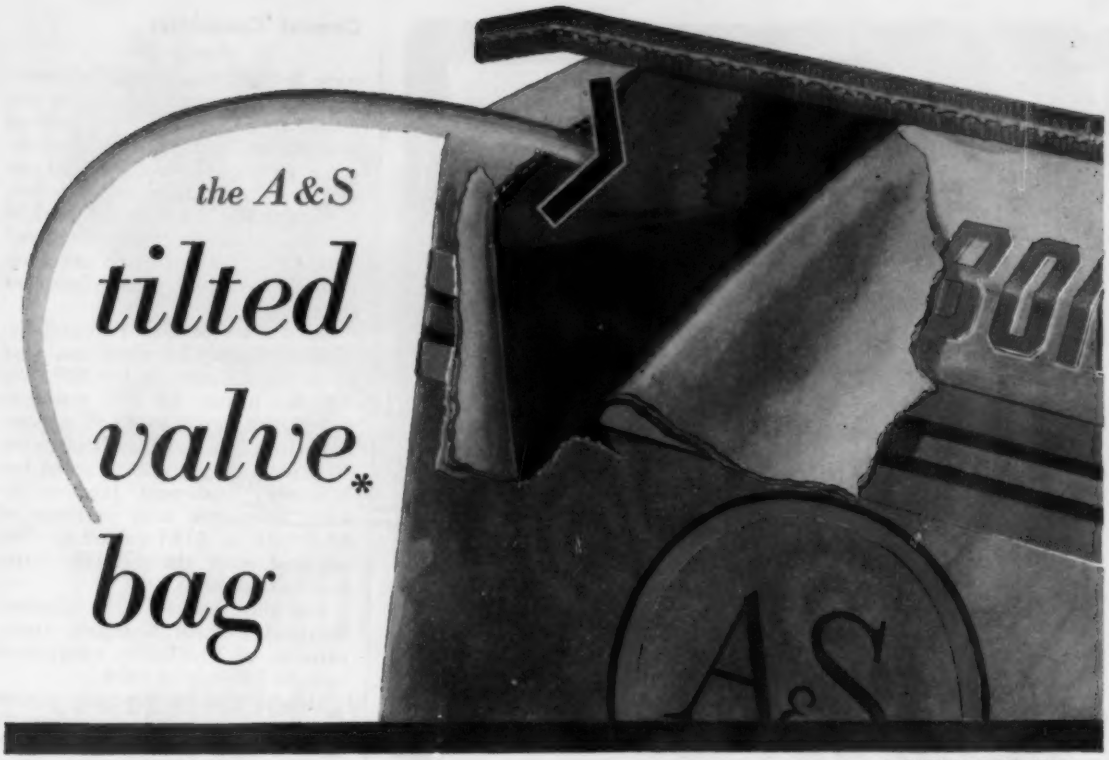
Although figures for 1955 have not been compiled officially, Norman C. Dale, administrative officer of the state ASC committee, said that they will probably show that Pennsylvania farmers used about 900,000 tons of aglime last year. He added that, from a general analysis, it would appear that 65 percent of every dollar of ACP funds expended was spent for liming materials.

---

Alpha Portland Cement Co., Easton, Pa., recently announced plans for the construction of a new cement plant on a 2,500-acre site in Frederick County. It was reported that construction may start this summer; plant operation will begin early in 1958.

*the A&S*

# *tilted valve* bag*




* PATENT APPLIED FOR

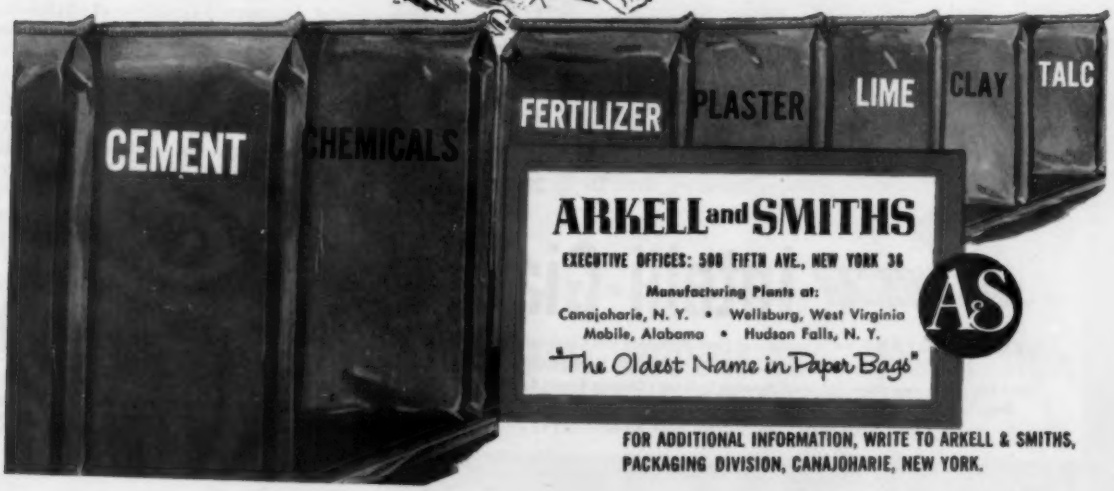
## A NEW DEVELOPMENT FOR ROCK PRODUCTS!

The A & S Tilted Valve Bag is a must for manufacturers of lime, plaster, clays, cement and similar products. With the Tilted Valve, these bags are faster to put on the filling spout and are self-sealing in the true sense of the word . . . as the product reaches the top of the bag, the valve is automatically pinched shut to form a more positive, sift-proof seal — far more efficient than previous designs of this type.

The Tilted Valve can be furnished on any sewn valve multiwall bag, and what's more, there is no upcharge for bags with this improvement!

Arkell & Smiths multiwall bags are outstanding in design and printed in sparkling inks and have long been a favorite for shipping finely divided materials, both inert and hygroscopic. This new "Tilted Valve" feature is just one more reason why thrifty packers buy from A & S.

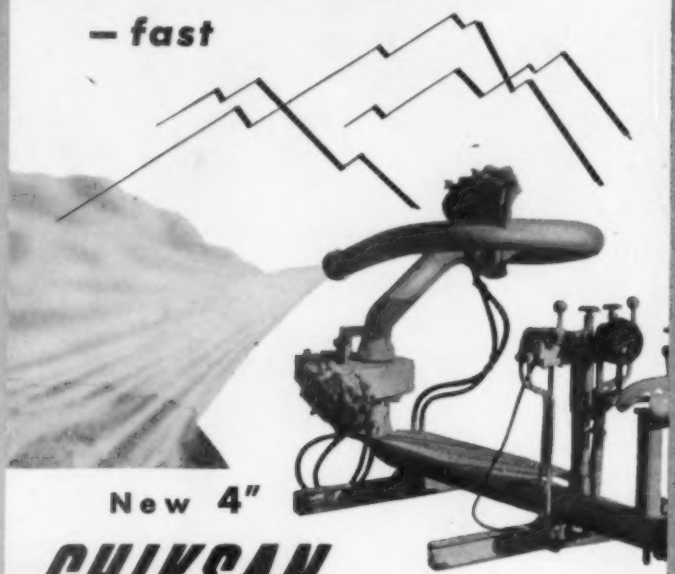
**Let A & S take over your packaging problem today!**




FOR ADDITIONAL INFORMATION, WRITE TO ARKELL & SMITHS, PACKAGING DIVISION, CANAJOHARIE, NEW YORK.

HOW TO MAKE A MOLEHILL OUT OF A MOUNTAIN

— fast



New 4"

CHIKSAN

intelli-Giant

Capable of throwing a powerful 300 foot stream at the rate of 2000 gpm, the new 4-inch Intelli-Giant literally blasts away burden in record time. Hydraulic controls, operated manually or by remote, reduce operator fatigue, permit pinpoint control of stream. Horizontal travel of 270° and verticle sweep of 120° assures maximum coverage from single location. 650 pound weight permits trailer mounting for transporting and movement at the job.

IF YOUR OPERATIONS INCLUDE:
Hydraulic Mining
Dam Construction
Slurrying
Stripping
Earth-Rock Compaction
High Pressure Jet Operations
*You can profitably use an Intelli-Giant*

For descriptive literature, write Dept. 22-6

CHIKSAN intelli-Giant

CHIKSAN COMPANY • *A Subsidiary of Food Machinery and Chemical Corporation*
Brea, California • Chicago 5, Illinois • Newark 2, New Jersey
Well Equipment Mfg. Corp. (Division) Houston 1, Texas • Chiksan Export Company, Brea, Calif.; Newark 2, New Jersey, Chiksan of Canada Ltd., Edmonton, Alta.

## Cement Companies

(*From p.* 48)

come for the year ended December 31, 1955, over 1954's total was announced by Marquette Cement Manufacturing Company. Net income, after a 2½-for-1 split and sale of 250,000 split shares in November, 1955, was $6,114,674, equal to $2.26 per new common share, compared with $5,121,049, or $1.88 per common share for 1954, after adjustment for the split.

Sales of the Medusa Portland Cement Company increased last year by $2,707,000 over 1954 to $28,355,000. Net income for 1955 soared to $4,098,000, equal to $4.94 a common share, after giving effect to the 50 percent stock dividend voted last November and paid January 30. This, compared with earnings of $3,018,000, or $3.64 a share in 1954, adjusted with the 879,171 shares now outstanding.

For the year of 1955 Missouri Portland Cement Company shows earnings of $3,009,039, compared with $2,540,033 for 1954.

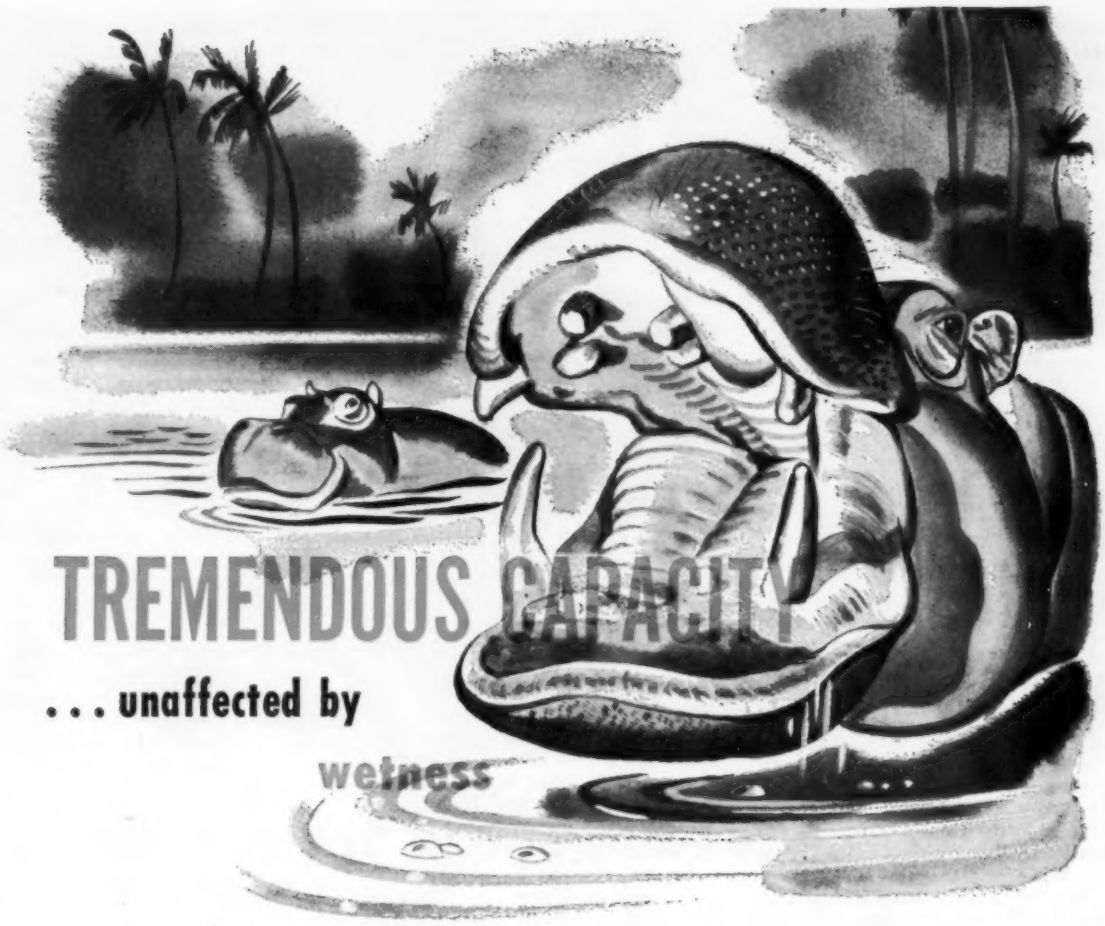
Dragon Cement Company reports for the year ended December 31 show a net income of $1,951,562, compared with $1,558,436 in 1954. Sales totaled $17,173,832, an increase of $14,023,920 over 1954.

Net earnings of $1,217,518 in 1955 were reported for Consolidated Cement Corporation, compared with $1,022,867 in 1954. The 19 percent increase brought earnings to $4.43 a share as against $3.72 a share the previous year. Net sales increased from $6,275,703 in 1954 to $6,717,937 in 1955. Capital investment during the year totaled $4,263,395.

For the period ending January 31, 1956, net sales for Peerless Cement Company totaled $11,397,278, and net income was $1,845,016, compared with totals for the period ending January 31, 1955, of $10,634,564 for net sales and $1,679,119 for net income.

Calaveras Cement Company reported net earnings of $1,356,563 for 1955, a 62 percent increase over the 1954 figure of $836,088. Net sales totaled $10,293,201 in 1955 as compared to $8,649,972 in 1954. Earnings were equivalent to $3.48 per share in 1955, as against $2.14 in 1954.

Net sales of $7,555,401 and net income of $907,095 were reported by Whitehall Cement Manufacturing Company for 1955. Figures for 1954 were $7,378,083 for net sales and $718,989 for net income. Common share earnings were $4.36 in 1955 and $3.62 in 1954, adjusted for a stock split in 1955.



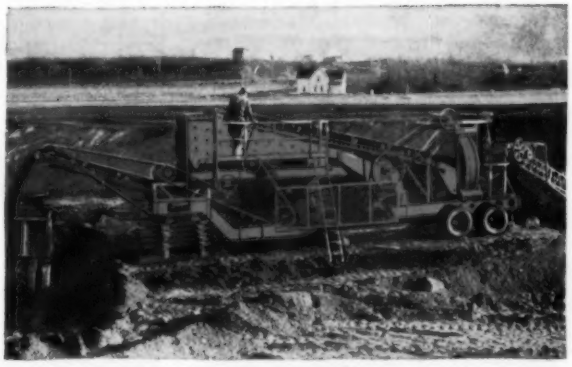

Big and adaptable, the hippo is a master in water. He can float like a log . . . submerge for 30 minutes . . . run across the bottom of a lake at eight miles an hour. On land, he runs as fast as a man . . . gallops at considerable speed . . . forages more than 25 miles a day to satisfy his huge appetite.

Universal built the 880 SENIOR "R" GRAVELMASTER like Nature built the hippo — for sustained performance under any conditions.

Wet, sticky material won't stop production when you're operating an 880 Senior "R". A 10" x 36" jaw teamed with a 30" x 26" roll crusher and a 4' x 12' inclined gyrating screen assures tremendous capacity. It takes an *inclined* gyrating screen to handle water-soaked pit-run material smoothly and efficiently.

Big and adaptable, the 880 Senior "R' can range like a hippo over wide territory. Travel it cross-country and see! The hippo-like quality of tremendous capacity unaffected by wetness adds to your profit when you own an 880 Senior "R".

Compare the 880 Senior "R" with competitive plants and you'll find a lot of other hippo-like features. Everything bigger — but the price!



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### J. A. Gustin & Associates Offers Consulting Service

J. A. Gustin, formerly assistant manager and mill superintendent for the Gouverneur Talc Company, Gouverneur, N. Y., subsidiary of the R. T. Vanderbilt Company of New York, N. Y., has opened his own consulting engineering service. The firm will be known as J. A. Gustin and Associates, Consulting Engineers and Technologists, and headquarters will be at Martinsville, Va.

The new concern will serve the portland cement, industrial minerals, and allied fields in the United States and also in other countries.

Before joining the Gouverneur Talc Company, Mr. Gustin was associated with the Bessemer Limestone and Cement Company as assistant general superintendent, with the Universal Atlas Cement Company as assistant plant manager and research engineer, and with the Coplay Cement Manufacturing Company as research engineer.

J. A. Gustin

### New Marblehead Lime Posts For W. E. Wing, Lester Crown

Wallace E. Wing has been elected chairman of the board and chief operating officer of Marblehead Lime Company of Chicago, succeeding Colonel Henry Crown. Lester Crown has been elected president, succeeding Mr. Wing.

Mr. Wing became associated with Marblehead Lime Company after his graduation as a Chemical Engineer from Ohio State University. As a chemical engineer he established laboratories at several Marblehead plants, and became director of research and later director of operations. In 1944 Mr. Wing was elected president of Marblehead Lime Co.

He has served as president of the National Lime Association for four successive terms and is presently a director. Mr. Wing is also active in the American Society for Testing Materials and the American Chemical Society.

Lester Crown, a graduate of Northwestern University Chemical Engineering School and Harvard Business School, joined Marblehead Lime Company in 1949, and was elected a vice-president in 1952. He is also a vice-president of Material Service Corporation, and a director of the Empire State Building Corporation.

Wallace Wing

Lester Crown

### Miami Concern Acquired By Maule Industries, Inc.

Maule Industries, Inc., Miami Beach, Fla., recently acquired the assets of Seminole Rock Products, Inc., Miami. Through its president, Jose Ferre, Maule paid $350,000 cash for the property after Seminole's injunction petition had been denied by U. S. District Judge J. P. Lieb.

The Seminole facilities, subject to $12,800 taxes, are located on a 300-acre tract near the Miami airport. Officials of Seminole estimated the property to be worth $800,000 to $1,000,000.

## Washington News

(*From page* 12)

The fact that all of this activity could take place without any public clamor is probably a testimony to the adroitness of the Federal Reserve Board. The final question, however, must still be answered. Did all this activity accomplish its objective? With respect to serious unemployment, the answer is clear. At the beginning of 1954, when the data were last revised, unemployment stood at about the irreducible level of 3,000,000. It rarely rose much above this level, and it is now slightly below it. With respect to major rises or falls in prices, the record is almost as good. Since the beginning of 1953 the Consumer Price Index has varied less than 2 points and it now stands at about 1 point above what it was three years ago. Since the beginning of 1953 wholesale prices have varied somewhat more widely. Nevertheless, the index is now less than 3 points above what it was in January, 1953.

All in all, the record is remarkably good. There are many in Washington who would dispute whether the Federal Reserve Board deserves all the credit. However, it is almost beyond dispute that their efforts have contributed substantially.

## Penn-Dixie Promotions

(*From page* 28)

in 1950 and later served in the same capacity at the Clinchfield, Ga., plant, of which he was named superintendent in 1952. Mr. Jones became superintendent of the Nazareth plant in 1954 and was made operating assistant at the beginning of this year.

Mr. Hensley's association with the cement industry began in 1939, when he joined Penn-Dixie in 1942 in the Boston office. He was subsequently transferred to the New York Sales office and was appointed New York district sales manager in 1947.

Burlington Quarries Corp., Burlington, Wis. Home of "Sunset Stone," world's largest selection of colored limestone.

# "Draglines give 10,000 Hours of Trouble-Free Performance with Cities Service C-300 Motor Oil!"

**Greasing of Dragline Bearings Cut 90%**—Burlington Quarries reports about switch to Cities Service Trojan H-2 Grease. "Pump in Trojan H-2 and it stays!" they say.

**How to Make Beautiful Sunset** is an art for which Burlington Quarries is famous. Here, colored "Sunset" stone is cut by one of their wire saws.

**... And Trojan H-2 Multi-Purpose Grease cuts greasing of bearings by 90%, reports Burlington Quarries Corporation.**

At Burlington Quarries, every man, every piece of equipment is kept constantly busy, hurrying to meet the nationwide demand for Burlington's famous "Sunset" colored limestone.

Draglines get an especially tough workout because Burlington Quarries uses them to quarry their stone instead of having it quarried out by hand with stone cutters. "But thanks to Cities Service C-300 Motor Oil and its high detergency, we've operated for over 10,000 hours without one bit of trouble," says Burlington.

Another Cities Service product that's been a tremendous help to their operation is Trojan H-2 Multi-Purpose Grease. Before they started using it, someone would have to go out every morning and pump grease into the bearings of draglines. But then, with Trojan H-2, they'd start pumping and it would push out grease that had been put in before. It soon became evident that Burlington could cut down greasing of bearings by 90%, because when you pump in Trojan H-2 Multi-Purpose Grease, it stays there!

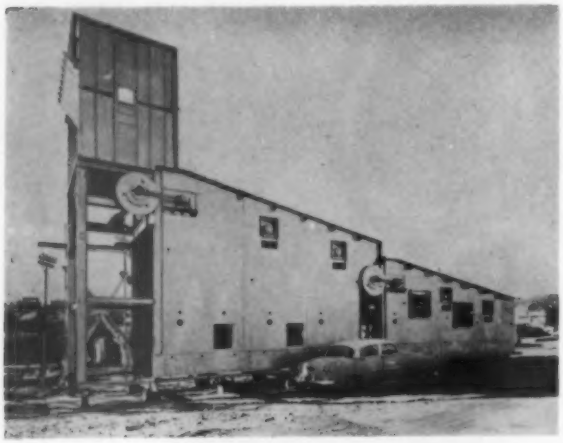
If you're not getting that kind of results from your lubrication, talk with a Cities Service Lubrication Engineer. Chances are he can help you. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

**CITIES SERVICE**

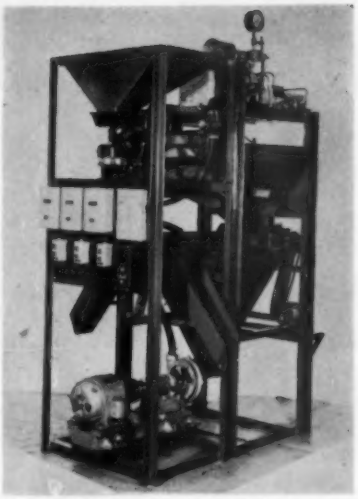
**QUALITY PETROLEUM PRODUCTS**

# New Machinery and Equipment

*(For More Information Use Card on Page 105)*

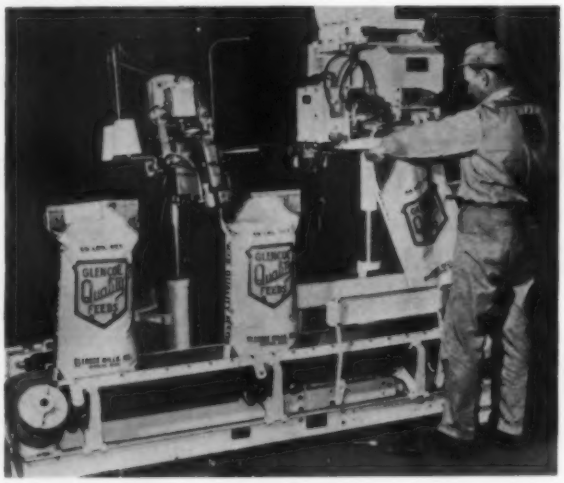


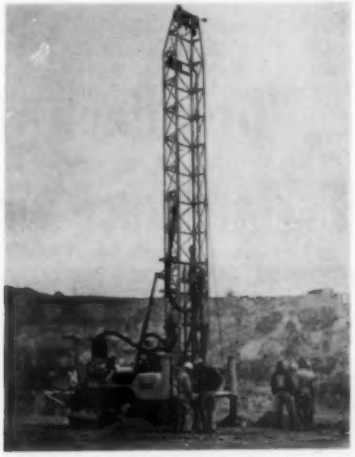
● With a 10-ft. wide by 60-ft. long grate, the largest inclined-grate cooler ever built by the Fuller Company will handle kiln discharge at the rate of 1,500 t.p.d., and will cool material from 2,400 deg. F. to 250 deg. F. Employing automatic controls for variable grate speed, this cooler supplies uniformly preheated air at 1,300 to 1,350 deg. F. for combustion in the gas-fired rotary kiln. ← (51)



● A laboratory-size heavy-media separatory vessel for batch-type testing has been designed by the Ore & Chemical Corporation. The unit, furnished complete in steel framework, can handle all feeds to which heavy media separation process is commercially applicable in size ranges from minus 1 in. to plus 10 mesh. Vessels are available with feed capacities up to 1,000 lb. per hour. ↑ (54)

● The "Packer-Ette" is a new automatic bag packer designed by Bemis Bro. Bag Company's Packaging Service to bring speed and accuracy to medium-sized packing operations. Bag capacities of the "Packer-Ette" range from 25-lb. to 150-lb. sizes. Weight tolerances are controlled by a two-stage pulsating feeder tray which first feeds rapidly, for speed of operation, and then more slowly at a rate that can be controlled for accuracy. → (52)





● Portadrill Model 6TA rotary drill, manufactured by the Winter-Weiss Company, utilizes compressed air for cuttings removal. The drill is completely unitized with no auxiliary equipment needed. The 6TA averages a foot or more a minute of 9-in. hole in most formations. Fast penetration, greater mobility, minimum "setting-up" and moving-out time, and lower operating cost are some of the advantages claimed by the manufacturer. ↑ (55)

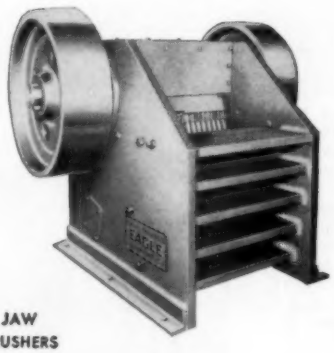
● Designed to fit D-9 tractors and others of comparable size and horsepower, the Model 2000-H ripper, manufactured by the Hensley Equipment Company, Inc., features a special wear collar which provides added protection to the leading edge of the ripper shank, reducing replacement cost considerably. Other features include easy portability, installation, and removal, and lightness of weight. ← (53)

● Design of the Newco safety hook allows full-throat opening and prevents catching on projections. The manganese bronze alloy gate locks automatically when a load is lifted and prevents the hook from spreading when overloaded. ← (56)

# PRODUCE MORE STONE AND GRAVEL WITH MOBILE

# Eagle Crushers

Portable Eagle crushing plant operated by Harry Miller Contracting Co., Suffield, Ohio, delivers pit run sand and gravel at rate of 100-125 yds. per hour for cushioning concrete super-highway nearby. Whole layout can be moved as gravel is consumed. (Power source is electric generator set—could be gasoline or diesel direct drive.)



JAW CRUSHERS



HAMMER-MILLS

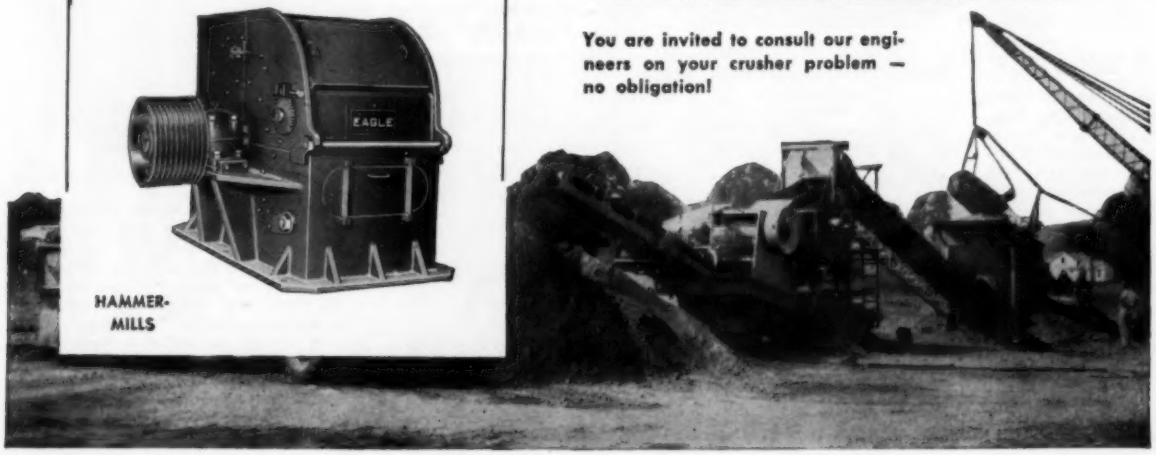
Eagle Crushers—both jaw type and hammermill—bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame—has pioneered in the field of portable, compact, crusher plants like the one above.

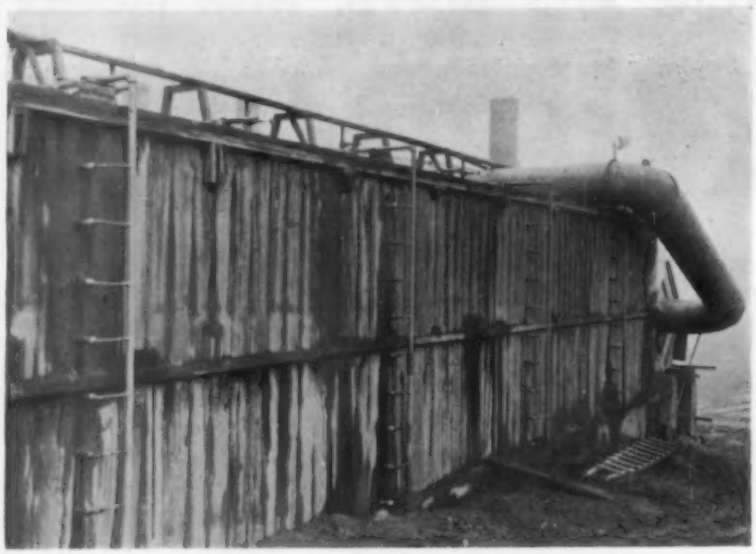
There is a range of sizes in the jaw crusher—and a variety of styles (skid-mounted, trailer, portable, roadside). Likewise, the hammermill or impact breaker is made in several sizes and for various applications—is particularly well suited to limestone reduction.

EAGLE CRUSHER CO., Inc. GALION OHIO-U-S-A

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

**You are invited to consult our engineers on your crusher problem — no obligation!**





Profile of collector shows nozzle arrangement, designed for maximum wetting efficiency.

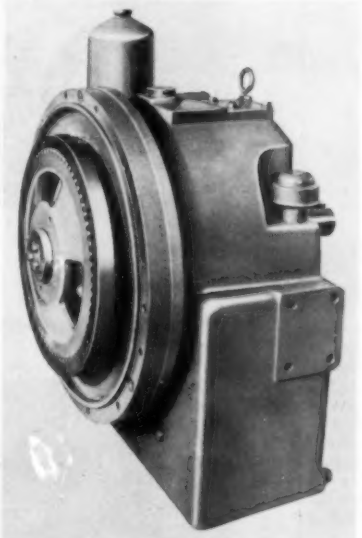
● The Southern Lightweight Aggregate Corporation of Richmond, Va., has recently made available to industry a patented new wet dust collector. This collector was developed to overcome a severe atmospheric pollution problem at one of their lightweight aggregate plants. The exhaust gases from their rotary kilns were hot, abrasive, and corrosive. Under these conditions most dust collectors would not perform satisfactorily. In the manufacture of the lightweight aggregate, shale is crushed and then heated to about 2,000 deg. F. in rotary kilns. Powdered coal is used as fuel for heating the kilns. The sulphur in the coal forms sulphur dioxide and sulphur trioxide when heated. These gases form sulphuric acid when they come in contact with moisture.

In order to overcome these problems a collector was built of wood which had been treated to resist heat and acid. Inside the collector wooden pegs instead of nails are used to hold the planks in place. A series of baffles was constructed inside the structure to guide the flow of the gases in the desired pattern. The wooden structure was erected on a concrete base which sloped toward an outlet drain in the center.

On top of the collector was a water main, with distribution pipes located at intervals. Attached to the distribution lines were a series of nozzles for wetting the dust and cooling the gas inside the collector. In order to prevent corrosion of the spray nozzles, plastic holders were used. The nozzle and baffle arrangement was designed to obtain the maximum wetting efficiency of the dust. The nozzle assembly was so constructed that it could be cleaned and serviced without shutting down the collector. One feature of the collector is that it is self cleaning, and there is at no time an accumulation of solid material.

Large volumes of gas can be treated economically with this method of collection. Over 50,000 cu. ft. of gas per minute is treated with the present collector. During a 24-hour period over 50 tons of dust is recovered. The dust loading of the gas entering the collector is approximately 16.9 grains per cu. ft., while the effluent from the collector is only 0.339 grains per cu. ft. The median-size particle in the effluent gas is one micron (1/25,000 in.) in diameter. The efficiency of the collector is greater than 90 percent. Although this collector was designed to overcome an atmospheric pollution problem created by a lightweight aggregate plant, it is applicable to many other situations. ↑ (57)

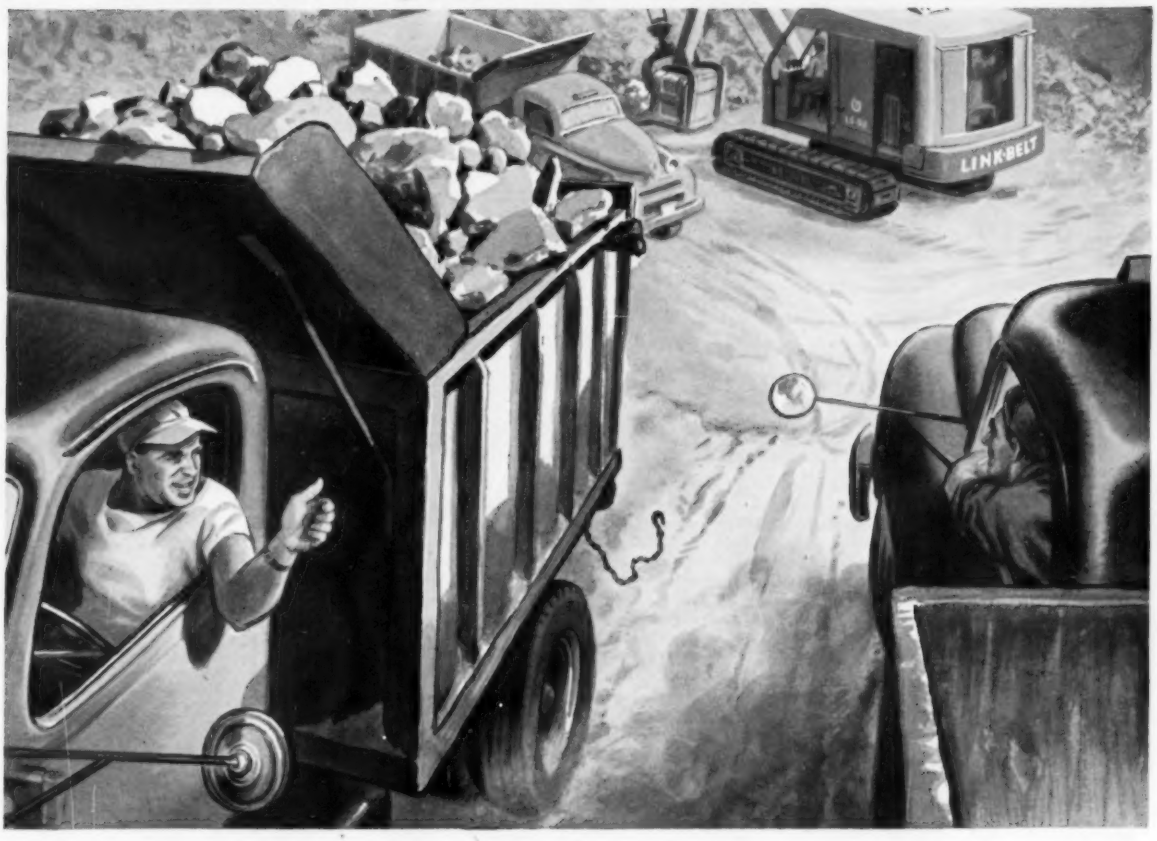
● New 8-ton and 10-ton crane carriers, powered by 265-cu. in. Chrysler gasoline engines, are being manufactured by the Federal Motor Truck Company, division of Napco Industries, Inc. Using a four-speed transmission and dual range transfer case, the carriers have 8 forward and 2 reverse speeds. Features include greater visibility, extra frame strength, and a stronger 10,000-lb. driving axle. ← (58)



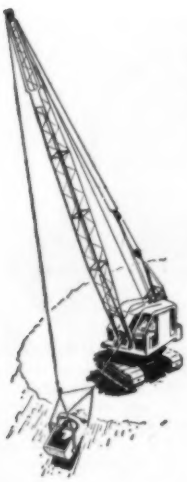
● Currently available in the 1500 Series, a new line of single-stage torque converters is in production by Twin Disc Clutch Company's Hydraulic Division. The 1500 Series are for engines producing from 30 hp. at 1,150 r.p.m. and 198 hp. at 2,400 r.p.m. The new units feature "unloading" of the engine through an exclusive blade design in which the turbine develops a counterhead which stops fluid circulation at high speed ratios. Applications include shovels, yarders, lift trucks, front-end loaders, and bucket loaders. ↑ (60)

● Model C-10H hydraulic backhoe made by the Henry Manufacturing Company now comes equipped with either hydraulic or manually controlled outriggers which ease the problem of straight side ditching on sloping terrain. Other features include a hydraulically operated telescopic boom, a parallel circuit control valve, and a self-anchoring main frame which grips 6½-sq. ft. of ground. → (59)

## It's time to compare... with LINK-BELT SPEEDER




# "First time a shovel has kept us rolling like this!"



### *Shovel-Crane owners:*

**New Link-Belt Speeder performance is so outstanding, it has completely revised existing production standards . . .**

With competition getting rougher, can you afford to think in terms of outdated production standards? If you aren't using a Link-Belt Speeder or haven't seen one in action recently—it's hard to realize just how much more production . . . more usable net horsepower these new shovels, cranes and hoes offer.

Speed-o-Matic power hydraulic controls—a Link-Belt Speeder exclusive—make every move fast, sure, easy. With them, you can boost output—often as much as 25% or more!

**From track treads to boom tip**

. . . every detail of a Link-Belt Speeder reflects advanced engineering, skilled craftsmanship, precision construction and quality materials.

And look at this list of standard and optional features — independent swing and travel . . . independent rapid boomhoist . . . torque converter . . . third drum . . . reversing clutches for both hoist drums . . . and power hydraulic-actuated swing brake, to mention only a few.

It's good business to *compare now!* See why more and more Link-Belt Speeder owners have completely revised their thinking on how fast a job will go. Your distributor will be pleased to arrange for you to see a new Link-Belt Speeder in action, give you the facts. Call him now! Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

14,103

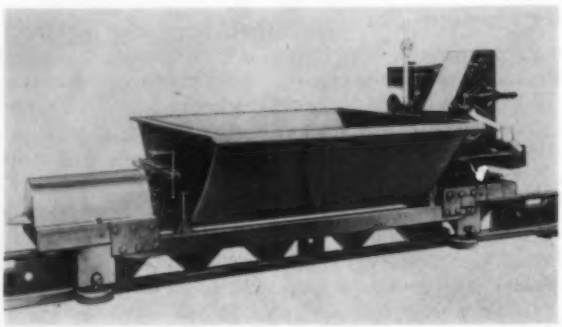
**LINK-BELT SPEEDER**

*Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls*

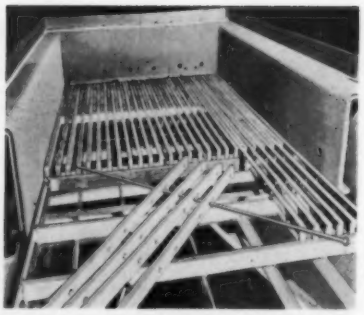
● Supplementing its line of jaw and roll crushers, Pioneer Engineering Works, Inc., subsidiary of Poor and Company, is now marketing the Cuber Senior, Model 3648, a dual rotor, up-running breaker featuring a multi-stage, triple-action reduction principle. Two massive rotors revolve in the direction of material flow to provide the entire rock-breaking action. At the first shattering impact of the first rotor, the material is exploded and shot up against the rear of the feed box. Fragments fall back. A second impact by the first rotor projects the fragments up towards an adjustable baffle that deflects oversize material back into the path of the hammers of the second rotor. There the material is again impacted and hurled against the discharge grate, finished material being passed by the grate openings and oversize being returned to further reduction by the whirling hammers. ↟ (61)

● Two new loaders for Ford and Fordson Major Diesel tractors have been developed by the Tractor and Implement Division, Ford Motor Company. Both loaders feature one-piece, box frame construction, high capacity, speed of operation, hydraulic pumps, and full circulating hydraulic systems. The FMD loader (foreground) has a rated load capacity of 1,500 lb. at full lift of 10 ft. 7 in.; the Ford loader (background), 1,000 lb. at 10 ft. 6 in. → (64)

● The Rex Railporter, manufactured by the Chain Belt Company, is a new portable transport for construction materials that runs on a single rail. The Railporter is loaded at the point of supply and sent on its way by engaging a clutch lever. The unit follows the rail unattended to its destination where it stops automatically, returns automatically to the loading point.

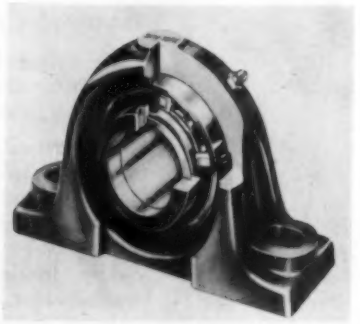


Workers discharge the hopper, engage the clutch, and the unit ↟ (63)

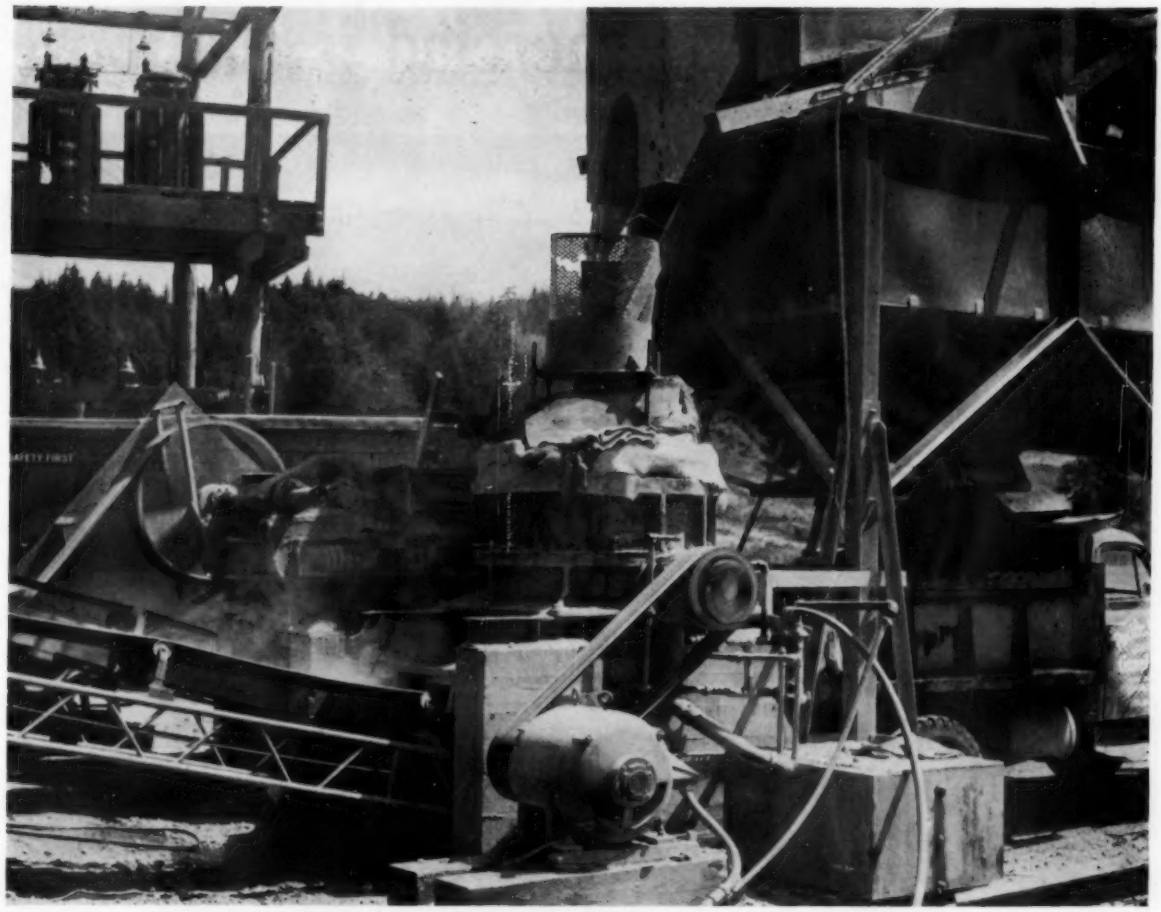


● A new grate design for the feed end of its air quenching clinker cooler has been introduced by Allis-Chalmers Manufacturing Company. All feed end grates are "L" shaped, and are staggered longitudinally to form a rigid, heat-resistant surface. Easily accessible through-bolts hold the grates tight and permit tightening from outside the cooler. ↟ (64)

● Single-stage torque converters are now being manufactured by the National Supply Company in a range of 100 to 1,000 hp. The unit pictured above covers a power capacity range of 160 to 330 input horsepower at 900 r.p.m., and has a cooling radiator for hydraulic fluid. Principle applications are for construction, excavating, earth-handling, and mining equipment. ↟ (65)



● Type SYH-X unit pillow block is a recent addition to the SKF line of bearing mounts. The new unit is of the eccentric lock type, extending use of the positive seal mounts to applications where an eccentric lock is desired. The SYH-X also has a reduced center height to permit its use where space is limited. ↟ (66)



# Roll wear reduced...production increased...Kue-Ken Gyratory Crusher for lowest cost crushing

Kue-Ken produces a uniformly fine product that requires little further reduction from the rolls. Capacity is stepped up without increasing wear on either the rolls or the crusher. Kue-Ken is the only gyratory crusher that operates on the "crushing without rubbing" principle. Rubbing, the main cause of liner wear, is substantially reduced. Liners last far longer than with other crushers. Short stroke makes for smooth operation and more uniform product.

WRITE FOR CATALOG

**STRAUB MFG. CO., INC. • 8385 Baldwin St. • Oakland, Calif.**

## KUE-KEN CRUSHERS

*"LOWEST COST-PER-TON CRUSHING"*

Jaw Crushers · Gyratory Crushers · Overhead Eccentric Crushers · Revolving Screens
Classifiers · Feeders · Elb Cone Ball Mills · Concentrating Tables · Vibrating Screens

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SEATTLE, WASH. ..... Washington Machinery Co.
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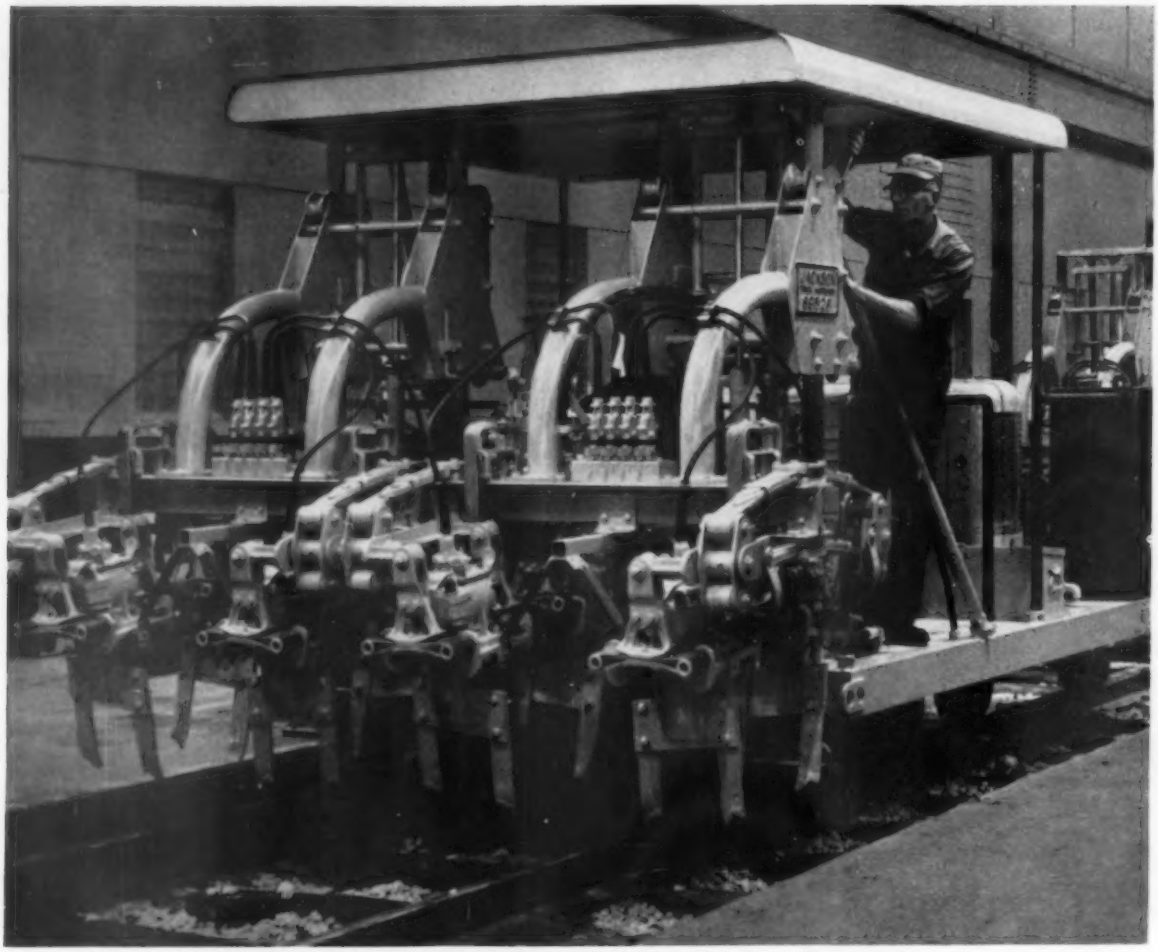
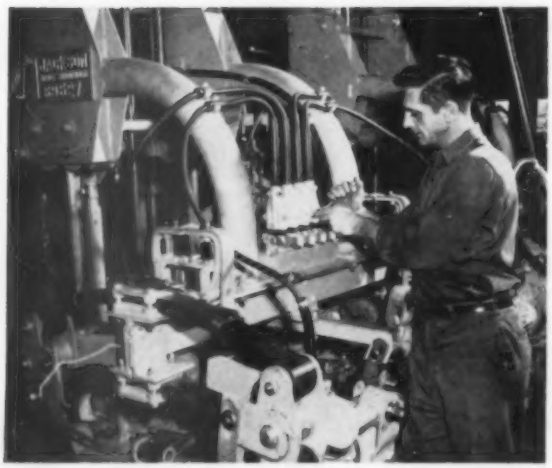
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

# "Tiger Brand Amerclad is the most



The completely self-contained Jackson Track Maintainer.



Tightening connectors. Machine delivers 4500, 2-ton blows per minute.

Assembling leads. Each vibrator delivers ¾ ton blow.

# durable cable we've ever used"

*says* **ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Michigan**

MANY years ago, the executives at Electric Tamper & Equipment Co. found out that when railroads order a piece of machinery, they expect it to last a long time—without breakdowns. Since then, Electric Tamper has won a high place in industry by producing a line of the hardest-working, *toughest* track maintenance machines on the market.

Leader of the line is the Jackson Track Maintainer, used for tamping ties. It has 8 powerful vibratory motors that drive 8 tamping assemblies. Each motor is powered with Tiger Brand Amerclad cable. The vibration and flexing (which are very severe) caused previous cable to crack until the jackets actually peeled away from the conductors. So they asked American Steel & Wire for advice.

Tiger Brand Amerclad was the solution. Finely stranded conductors soak up vibration and allow greater flexibility than ever before. The tough, well-cured jackets are impervious to oil, grease and the burning sun.

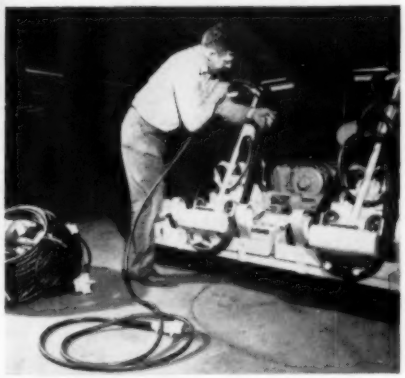
In the company's own words, "Tiger Brand cable is certainly superior to anything we have ever seen for this class of service. Its complete dependability under all service conditions has definitely helped us to maintain our good reputation in the field."

Do you want a *better* electrical cable—engineered for your equipment? Just call your American Steel & Wire representative.

The Jackson Multiple Compactor for consolidation of granular soil.

Hand Vibrospade. Cable usually drags on the ground.

Small compactor. See why they need durable cable?



**AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO**

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS - TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
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## USS TIGER BRAND ELECTRICAL WIRE & CABLE

*A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB*

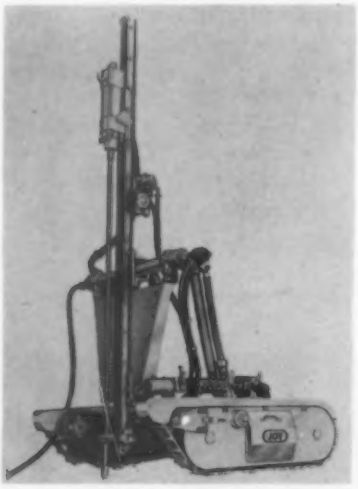
- machine tool and building wire
- special purpose wire and cable
- asbestos wire and cable
- paper and varnished cambric cable
- aerial, underground and submarine cable
- shovel and dredge cable
- mold cured portable cord

USS

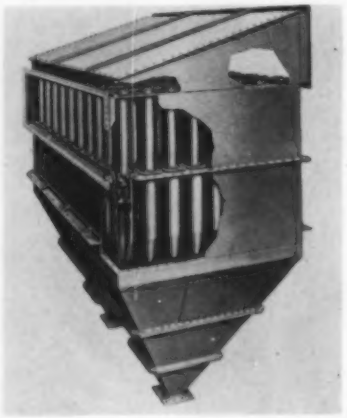
UNITED STATES STEEL

● Used for the simultaneous loading and screening of sand, gravel, crushed rock, limestone, and similar materials, the Model 101 portable conveyor is the largest made by the Kolman Manufacturing Company. The conveyor features an operators platform, head pulley clutch, back-stop, extended engine control, and rugged design. The Model SB-90 vibrating screen is designed to eliminate all possible excess weight. Freedom of motion provides maximum screening power without transmitting vibrations to the rest of the plant. ▲ (67)

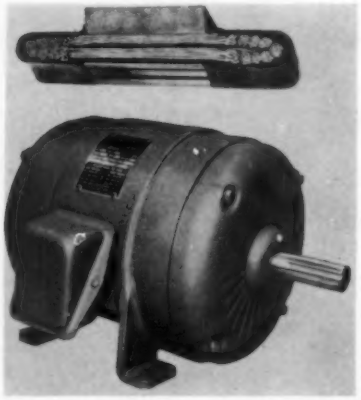
● Erie Strayer Company has added two new groups to its line of clamshell buckets: ⅜- to 4-cu. yd. light rehandlers, and ⅜- to 2 cu. yd. extra heavy-duty hard diggers (pictured above). Through the use of equalizer bar arrangements, the complete line can be adapted to a 3- or 4-line application. ▲ (72)



● A completely power-operated wagon drill, the Jr. Challenger, has been developed by Joy Manufacturing Company. It is a self-propelled, track-mounted drill that mounts a heavy (360 lb.) 4½-in. drifter, and drills up to 3½-in. dia. holes to depths of 40 ft. in any formation. All movements of feed and drill are performed hydraulically. Two direct-connected air motors provide tramming power—chain drives are eliminated. ▲ (68)

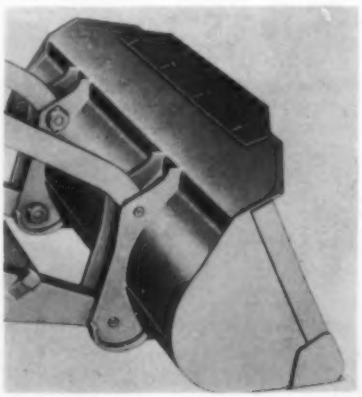


● The new Cyclo-trell multiple-tube centrifugal dust collector, manufactured by Research-Cottrell, Inc., is designed for a higher gas flow than has previously been obtainable with this type of collector. The aerodynamic vanes are designed to provide higher velocities in the inlet tubes and to increase the gas flow in the outlet tubes. The inlet tubes and vanes are of cast iron to resist the abrasive force of incoming gas. ▲ (70)



● The Lincoln Electric Company has introduced a new line of "Linc-Weld" motors featuring an extruded plastic insulation, which provides physical, chemical, and thermal protection. The motors, available in standard sizes from 1 to 40 hp., are built in the open-type frame, but may also be used as splash-proof motors or as totally enclosed motors. ▲ (73)

● Layne & Bowler Pump Company is now marketing the Verti-Line Package-Pump, which is pre-engineered for ordering by unit number and delivery as a complete package. The unit is available in sizes from 2 through 7½ hp.; heads to 340 ft.; capacities from 200 to 7,500 gal. per hour. Features include a General Electric VHS weather proof motor, cast iron surface discharge head, cast iron bowls, bronze impellers, and stainless steel shaft. ◀ (69)



● Caterpillar Tractor Company has designed a new bucket spill plate attachment for No. 977, No. 955, and No. 933 Traxcavators. The new attachment is said to eliminate excessive spillage, even when working in loose, friable material. It is adjustable and can be extended from 2½ to 5 in. above the bucket spill plate. ▲ (71)

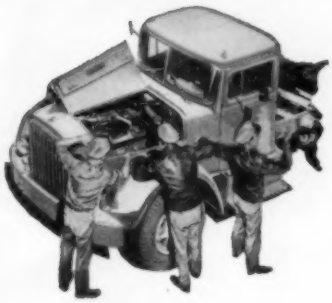
● The addition of a 6-in. Rok-Master to its line of percussion rock drill bits has been announced by Chicago Brunner & Lay Rock Bit Corporation. The bit, designed for use on Ingersoll-Rand Quarrymaster drills, features 2 by 3 A.P.I. threads, super-tough bit body, with fast-drilling carbide inserts which have unusual resistance. ◀ (74)

## Get behind the wheel!

The AUTOCAR Driver Cab has no equal for strength, comfort and safety, and you know it in a minute, once you get behind the wheel and try the leader in BIG trucks . . . AUTOCAR!

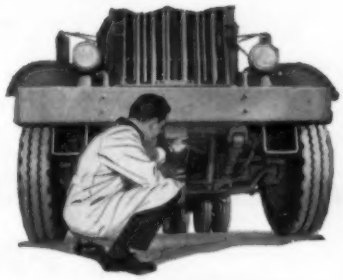
## Lift up the hood!

There's rugged power in every AUTOCAR! And it's engineered right for *your* work! Balanced design is a must in AUTOCAR and you get matched heavy-duty in every unit...every assembly...in AUTOCAR!



## Look underneath!

Look at the AUTOCAR superior frame structure . . . all-bolted construction . . . stable front-end. Your AUTOCAR is engineered to perform . . . and to last!



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# AUTOCAR QUALITY

## TRY THIS 3-WAY TEST AND YOU'LL KNOW WHY THE LEADERS ALL PREFER AUTOCAR

*Write for Autocar Fact Book Now!*

**Ask your Autocar Representative—Or WRITE—now!**

**AUTOCAR DIVISION**
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Send me facts about AUTOCAR QUALITY in terms of extra earning power in my business.

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24-F

**AUTOCAR TRUCKS**
DIVISION OF THE WHITE MOTOR COMPANY, EXTON, PA.

# Drivers last longer...

## when heavy-duty trucks use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 60, New York 16, N. Y.

Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

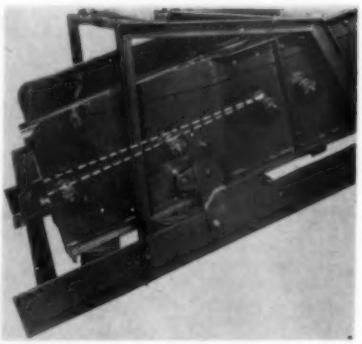
JOHNS-MANVILLE JM PRODUCTS

**Johns-Manville**

**INDUSTRIAL FRICTION MATERIALS**

● A moderate-sized, lightweight, exceptionally strong wheel block adequate for use with heavily loaded vehicles has been developed by Calumet Steel Castings Corporation. Called the WB2H, it is designed with rounded edges, stiffening ribs, supporting members, and integrally cast gripper teeth. Provision is made for chaining to dock or vehicle. Approximate overall dimensions are 9 by 10 by 10 in. ▲ (75)

● To increase the portability of its Model 250 high pressure combination cleaner, the Malsbary Manufacturing Company has developed a tricycle mounting. Zero pressure rubber tires facilitate the movement of the mounting. The frame is 1-in. pipe-size tubular steel; the drawbar is 1½-in. pipe size tubular steel. Mounting may be purchased for Model 250's now in use. ▲ (76)



● Deister type UHS screens, held under tension transversely on separate screen panels, are now independently adjustable at both the feed and discharge ends to increase or decrease the screening angle. This improvement in design is now a standard feature on the larger size Deister type UHS vibrating screens. The dotted lines show the positions. ▲ (77)

# Cutting costs is the primary function of portable conveyors

To make the greatest cost savings, portable conveyors must:

. . . have quality construction for long life and trouble-free operation. They must be available in the length and capacity range to suit your needs. They must be available with the features and accessories you want—screens, power hoists, pneumatic or steel wheels, gas or electric drives, etc.

They must be easy to move around the yard . . . easily towed from job to job. They must withstand constant use and frequent movement.

Shown above is the portable conveyor of advanced design, the Barber-Greene 363. Shaft and gear reducer drive—no chains—no sprockets, full swiveling wheels, Acme take-ups and many other exclusive features.

Shown below are other models in Barber-Greene's complete line of cost-cutting conveyors.

**Model 374 cuts cost at high capacity.** With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.

**Model 358 cuts cost of car unloading.** Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.

**Model 362—low-cost, high-quality portable.** Three-roll carriers, swivel wheel truck, and many other features not available on conveyors of this low-price range, are standard on the 362.

56-8-PO

**Write for literature on any portable in the Barber-Greene line.**

**Barber-Greene** BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

● LeTourneau-Westinghouse has announced the new SwitchMobile, the first machine of its kind, built entirely to the specifications of the Pennsylvania Railroad, where it is now in service. A type of rubber-tired switch engine, the machine can climb across tracks, travel on city streets, and pull freight cars along the tracks. ← (78)

● A new tandem axle trailer dump, with front-mounted telescopic hoist, has been designed for operation with single rear axle tractors by Galion Allsteel Body Company. According to the manufacturer, exceptional stability in dump position and on the highway is afforded by the matched design of body, chassis, and Uni-scopic hoist. Called the Model STMF Transporters, the new trailer dumps have payload capacities of 10 to 40 cu. yd. ↑ (79)

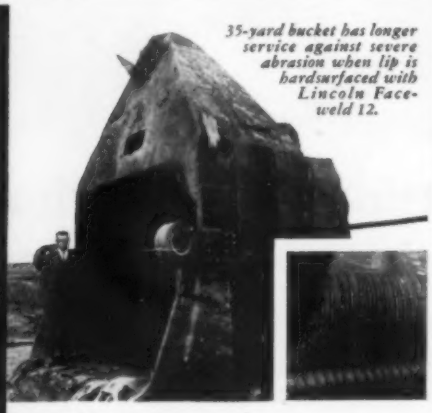

When only 2 electrodes . . .

Handle most hardsurfacing needs . . .

Yet give you longer life against impact and abrasion . . .

**WHY**

**buy anything but LINCOLN Abrasoweld and Faceweld hardsurfacing electrodes**



*35-yard bucket has longer service against severe abrasion when lip is hardsurfaced with Lincoln Faceweld 12.*

## HOW TO CUT LIP WEAR ON BUCKETS

PARALLEL beads of Lincoln Faceweld 12, placed 2½" apart result in equivalent wear life to that of a fully coated surface, according to operators.

On this 35 cubic yard bucket there are 16 rows of Faceweld beads extending across the bottom of the lip and a third of the way up the sides as shown in the inset. The spans between the beads are believed to fill up with excavated material resulting in the longer wear.

Lincoln Faceweld and Abrasoweld can solve many of your hardsurfacing problems with similar success. Write us for details.

**THE LINCOLN ELECTRIC COMPANY**
Cleveland 17, Ohio
*The World's Largest Manufacturer of Arc Welding Equipment*

**THE LINCOLN ELECTRIC COMPANY**
**Dept. 5210, Cleveland 17, Ohio**

Send me Bulletin SB-1352 on Lincoln Hardsurfacing Electrodes.

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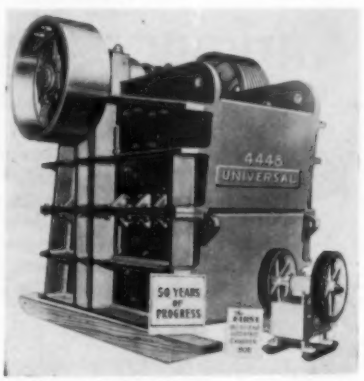
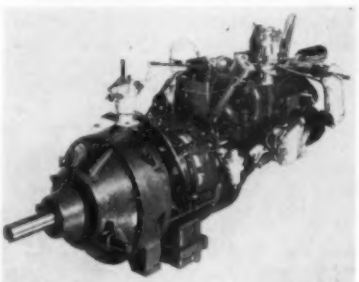
City_____ State_____


● The 4448 "WRB" overhead eccentric jaw crusher, manufactured by Universal Engineering Corporation, includes these features: stress-relieved, welded-steel base; spherical self-aligning bearings hydraulically removed; rocker-type steel toggle plate; and extra long jaws. Approximate capacities range from 200 to 350 t.p.h. at a 4-in. discharge opening to 800 to 950 t.p.h. at the maximum 12-in. opening. ↑ (80)

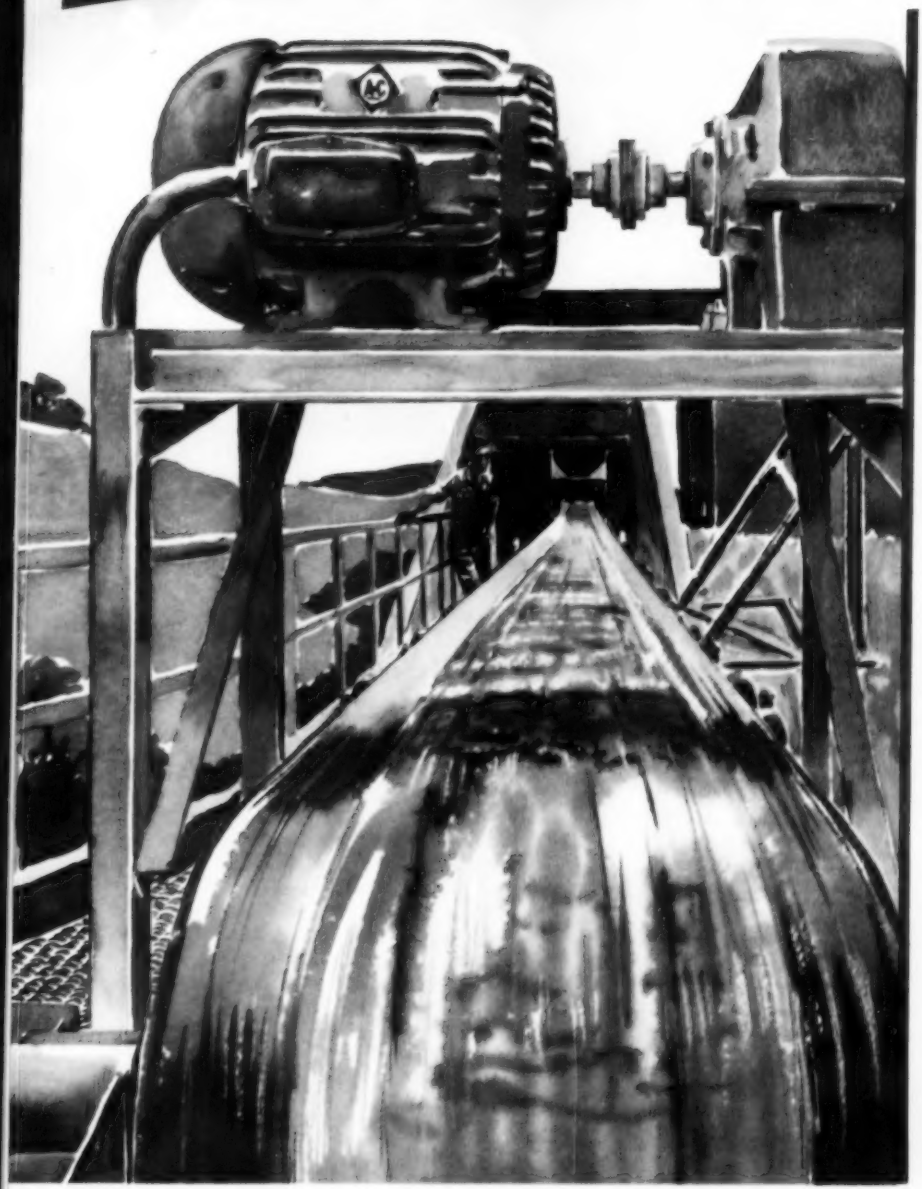


● Torque multiplication of 2.6 is provided by Chrysler Corporation's new industrial torque converter. Lightness of weight, due to its cast aluminum alloy construction, results in easier, faster, and more economical installation of the converter. ↑ (81)

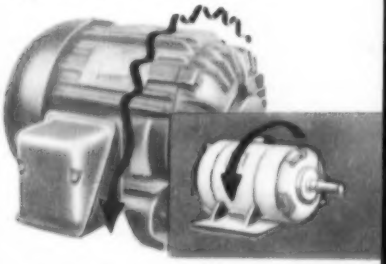
# There's MORE

## *'Round-the-Calendar Operation*

## with Allis-Chalmers MOTORS



**MORE IRON AND COPPER**
provide double protection against costly breakdowns. Liberal use of cast iron protects against frame distortion, and greater amount of copper increases electrical life.



**MORE COOLING SURFACE**
of Allis-Chalmers deep-rib motors makes insulation burnouts highly improbable under normal conditions. There are no external enclosed air passages to become clogged.

**A NATIONAL NETWORK**
of Allis-Chalmers Motor Distributors is on the job day and night... ready to provide the fast service needed to keep your plant operating 'round-the-calendar.

As a new machinery component or as replacement, specify Allis-Chalmers motors. To find out more, contact your nearby Allis-Chalmers district office, your A-C distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

# ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-4906

## Are you set up to meet Volume and Specification demands?

*Accelerated construction programs call for a 35% increase in cement production by 1959. You're in for some profitable years if you gear your plant to meet the challenge.*

### Allis-Chalmers Can Help You and Your Consultants

Evaluating your present process should be your first step in expanding. Here is where Allis-Chalmers — with more than 50 years' experience in building and applying cement-making equipment — can help.

Allis-Chalmers is not only concerned with machinery application, but with overall plant efficiency. Increased grinding and burning capacity — better heat recovery — faster clinker cooling — maximum fuel utilization — lower power consumption — maintenance economy — are all vital considerations. Only with this approach can you achieve capacity increase and quality improvement at the lowest cost.

Yes, you get more . . . more engineering co-operation when you specify A-C.

### Allis-Chalmers Rotary Kilns

Over half of all cement made in the U. S. is processed in A-C equipment. The reason? Allis-Chalmers has pioneered many major improvements in machinery design. For example, air-cooled kiln feed and discharge ends save rebricking cost and prevent shell distortion. True circle, all-welded construction insures best lining fit, long refractory life. Floating-type riding rings provide flexible support and proper weight distribution.

For complete information, see your local Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

# ALLIS-CHALMERS

A-4970

**"Coordineered" Equipment for the Cement Industry**

Grinding Mills

Vibrating Screens

Kiln-Dryers-Coolers

Crushers

# Labor Developments

### A Look at the Books

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

WHAT Walter Reuther's 1,000,000-member Automobile Workers Union could not get from General Motors ten years ago, the relatively small 100,000-member Iron Workers Union finally secured from the Truitt Manufacturing Company, Greensboro—"a look at the books." But the Iron Workers had the help of the U. S. Supreme Court.

It will be remembered that Reuther's now famous demand, which caused chills to run up the spine of many a business man, arose when shortly after the end of World War II General Motors refused to consider a wage increase without a simultaneous increase in the price of its products. It was making the familiar inability-to-pay argument. Reuther agreed to moderate his demand, but only if a look at the books convinced him that the company's position was well founded.

Despite a hard-fought strike, which was finally settled by the application of the 18½ cents-and-hour first postwar pattern adjustment, Ruether's view did not prevail. It was said at the time that his demand for access to the company's innermost secrets was only a part of his bargaining strategy, and that he did not press it through the available legal channels because he had no hope of winning that way. That judgment may now be questioned, in view of the Supreme Court's recent ruling.

When the Truitt Manufacturing Company answered the Iron Workers Union's demand for a 10-cents-per-hour wage increase with a 2½-cents-per-hour offer and the statement that any greater payment would put it out of business, the Union asked the company to produce some evidence substantiating these statements and requested permission to have a certified public accountant examine the company's books, financial data, etc.

This request being denied, the union asked that the company submit full and complete information with respect to its financial standing and profits, insisting that such information was pertinent and essential for the employees to determine whether or not they should continue to press their demand for a wage increase . . . The company refused all the requests, relying solely on the statement that "the information . . . is not pertinent to this discussion, and the company declines to give you such information. You have no legal right to such."

On the basis of these facts, the National Labor Relations Board found that the company had failed to bargain in good faith with respect to wages in violation of the federal labor law. The NLRB ordered the company to supply the union with such information as would substantiate its stated position of economic inability to pay the requested wage increase.

This ruling was appealed to the Circuit Court of the Fourth Circuit, which refused to enforce the NLRB order. In a similar case the Circuit Court of the Second Circuit took just the opposite view. Because of this conflict of decisions, the Supreme Court agreed to rule on the issue.

In doing so it upheld the NLRB's requirement, saying, "Good faith bargaining necessarily requires that claims made by either bargainer should be honest claims. This is true about an asserted inability to pay an increase in wages. If such an argument is important enough to present in the give-and-take of bargaining, it is important enough to require some sort of proof of its accuracy."

Two points remain to be made:

1. Neither the National Labor Relations Board nor the Supreme Court said that the books had to be fully revealed to one union. Sufficient evidence to substantiate the claim of inability to pay is all that is required.

2. The Supreme Court was careful to say, "We do not hold, however, that in every case in which economic inability is raised as an argument against increased wages it automatically follows that the employees are entitled to substantiating evidence. Each case must turn upon its particular facts."

Despite these safeguards, hereafter the wise employer will not claim inability to pay unless he is prepared to make his economic position public not only to the union but also to his competitors.

### Association Bargaining

Because there is a great deal of association bargaining in the pit-and-quarry industries—that is, bargaining between an association representing all or most of the employers in a particular industry and the various unions which represent the employees—a recent ruling of the NLRB will be of special interest.

The case involved the situation in which an employer who was a member of such an association decided to resign from it after the association had negotiated a new labor agreement covering him. It was clear that he disliked the wage rates fixed by the contract. When the contract was brought to him for signature, he refused to sign it.

At the same time, his employees objected to another part of the contract, namely its insurance provisions. As a result, they petitioned the National Labor Relations Board to certify the union as their bargaining representative. The employer thereupon petitioned the NLRB for a new election among his workers.

The NLRB turned down both petions. With respect to the employer, it pointed out, "The record in this case established that the employer's attorney was clothed with authority to participate in behalf of the employer and other employers in the multi-employer bargaining. Through him the employer gave its approval in advance to the designation of a bargaining committee to carry out negotiations in behalf of the informal, *ad hoc*, employer group of which it was a part. The employer thus endorsed the joint negotiations. Moreover, it gave specific assurances that it, too, would go along with the results thereof. The employer thereby clearly evinced its intention to remain with the existing multi-em-

(*Continued on page* 100)

# LINK-BELT PRE-BILT

# MADE NEAR YOU

## Built in standard sections for 18, 24, 30 and 36-in. belt widths... at each of 9 plants

AN unmatched combination of belt conveyor efficiency and economy, Link-Belt PRE-BILT sectional belt conveyors incorporate standard products packaged with standardized sectional truss frames and structural steel supporting bents. They're easy to install . . . require little or no special engineering on most jobs. And their portability plus easy extension are important aids to flexibility.

PRE-BILT conveyors are manufactured at a Link-Belt plant in your own area to assure prompt delivery. There are also Link-Belt sales offices located throughout the country . . . equipped to give you prompt, efficient service for all your belt conveyor requirements.

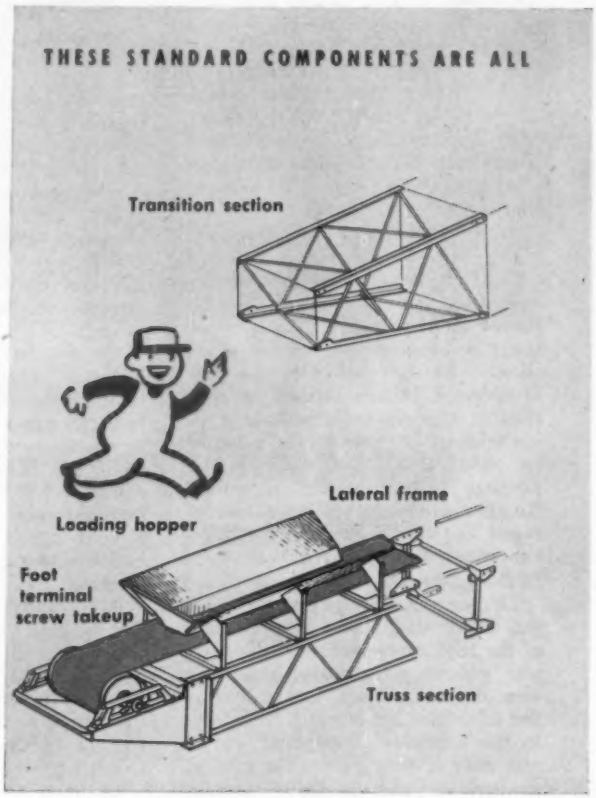
For more information about these conveyors—with drives up to 40 hp and 24 and 42-inch truss depths, write for your copy of Book No. 2579.

**LINK-BELT**

**BELT CONVEYOR EQUIPMENT**

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

14,110




## AS SIMPLE AS THIS FROM SELECTION TO OPERATION—

**EASY SELECTION**
Your Link-Belt representative will help you select the best combination of PRE-BILT sectional belt conveyor components.

**PROMPT QUOTATIONS**
He will prepare a comprehensive and accurate estimate of requirements for installations that permit "on-the-ground" survey.

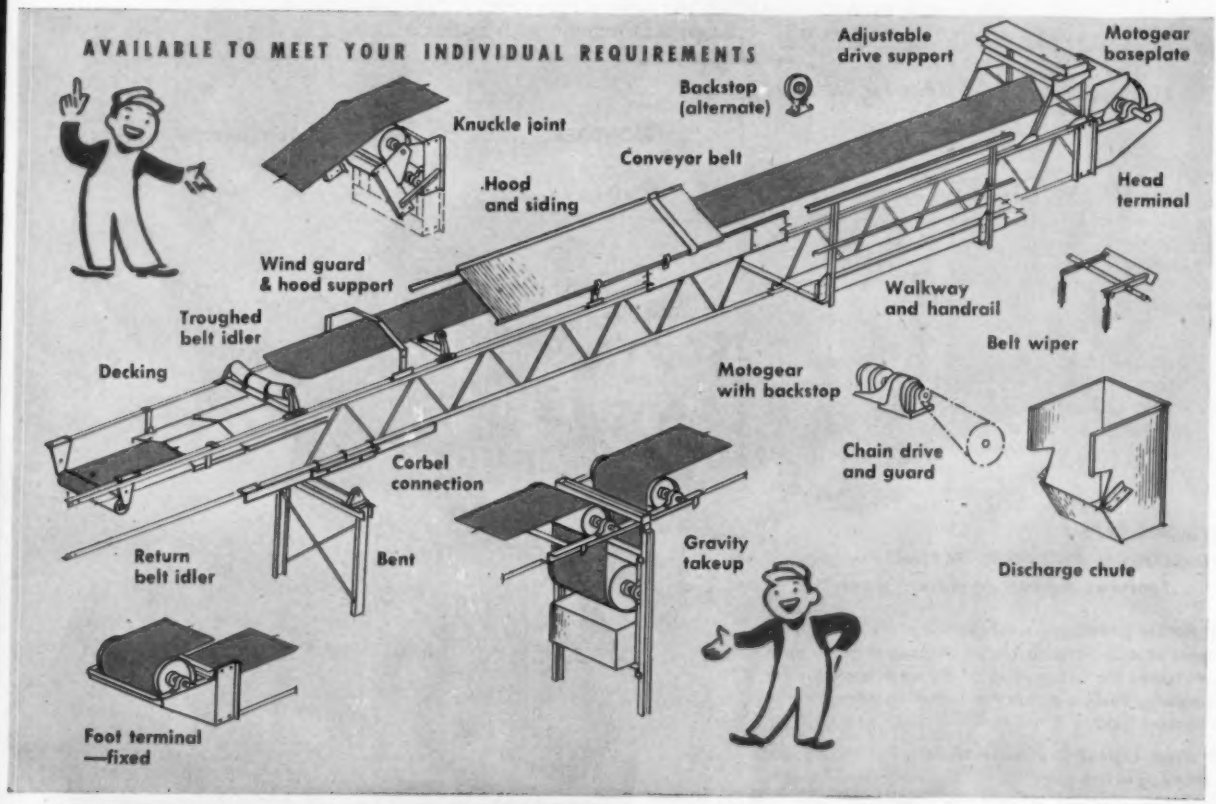
**SIMPLIFIED PURCHASE**
Parts are standardized, interchangeable, all available from one supplier. Link-Belt representative can furnish all necessary data.

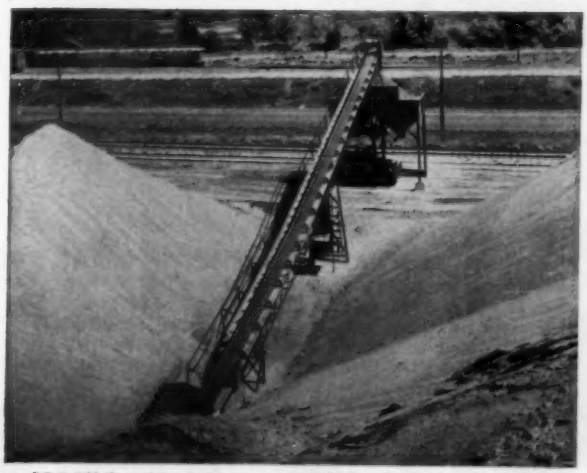
**QUICK DELIVERY**
PRE-BILT conveyors are built at nine strategic locations and are shipped from the plant nearest you.

**FAST INSTALLATION**
Can be readily handled by your own erectors in most cases—due to simple construction and shop-assembled components. Link-Belt can also furnish complete erection service and supervision.

# Sectional Belt Conveyors

# FOR FAST DELIVERY



PRE-BILT reclaim belt conveyor delivers sand and gravel from tunnel under stockpile to hopper. System of nine belt conveyors and two radial stackers handles up to 6000 tons per day.

PRE-BILT conveyors can be easily extended to follow mining or disposal operations, as in this system providing low-cost disposal for 1140 long tons per hour of overburden and lean ore.

# SYMONS® SCREENS

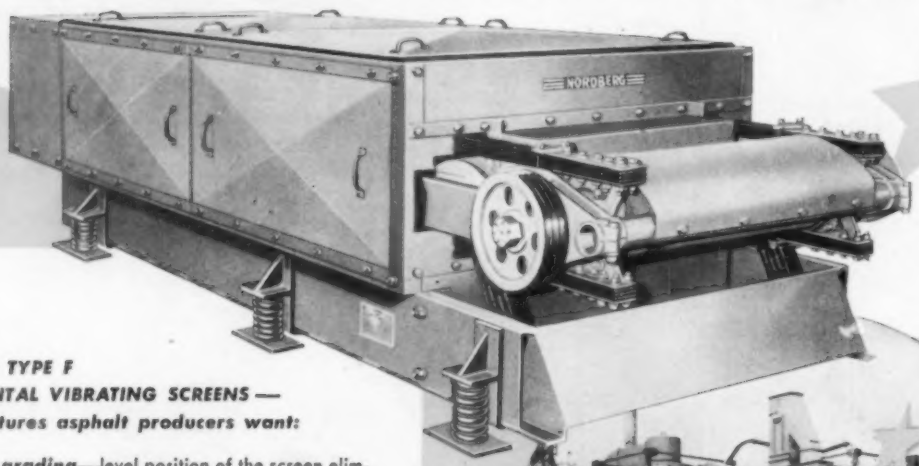
## for accurate sizing in bituminous

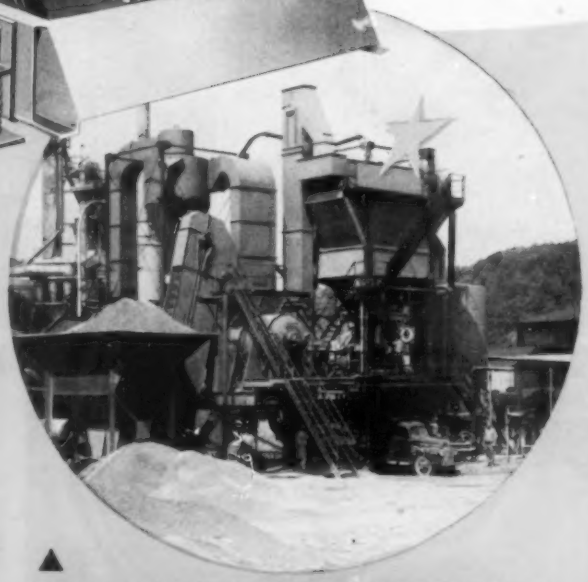
Aggregate used for multi-aggregate bituminous mix *must be accurately sized* to meet today's exacting specifications. That's why prominent asphalt plant manufacturers *standardize* on Symons Type F Horizontal Vibrating Screens.

Read why these leading manufacturers specify Symons Screens . . . good reasons why you too will benefit with Symons Type F Screens handling your separation jobs.

*Write for literature today.*

**NORDBERG MFG. CO., Milwaukee, Wisconsin**



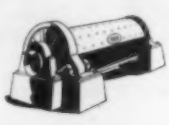
***SYMONS TYPE F HORIZONTAL VIBRATING SCREENS — Features asphalt producers want:***

- ***Better grading***—level position of the screen eliminates bouncing and cascading of material along deck and leaves the full opening of the mesh available for screening. Positive action thoroughly agitates material and more quickly stratifies it for closer sizing.
- ***High capacity***—positive vigorous screening and conveying action gives the "F" Screen greater capacity than is possible with inclined type screens.
- ***Adaptability***—installed in a level position with low overhead requirements, the "F" Screen shortens elevators, simplifies construction and reduces overall dimensions of the plant. Being free from vibration, there is no tendency to shake scales or other measuring devices.
- ***Multiple separation***—with multiple decks and many varied screen sizing possibilities, including gap, lower deck, versatility of sizing to meet any specification is possible with the "F" Screen.
- ***Low maintenance***—drive unit with bearings and motor are located outside the screen housing, away from dust and heat.

▲ ***Standard Equipment on SIMPLICITY Plants.*** "We have long standardized on the use of Symons Screens in Simplicity Plants. One big reason is that highway engineers realize that accurate screening means much to the durability of finished asphalt pavements," says Wm. C. West, of The Simplicity System Company.

SYMONS PRIMARY GYRATORY CRUSHERS

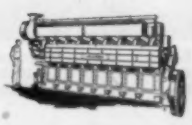
SYMONS CONE CRUSHERS



GRINDING MILLS

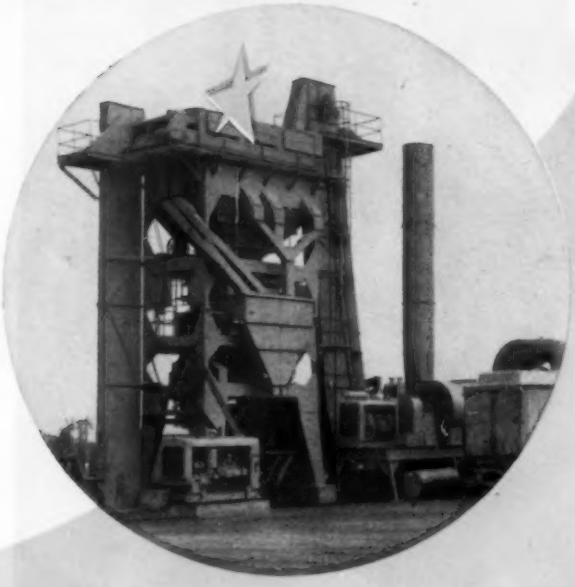
SYMONS V-SCREENS

ROTARY KILNS and COOLERS



DIESEL ENGINES — 10 to over 12,000 H.P.

# ARE THE CHOICE
# mixing plants



▲ ***Standard Equipment for MADSEN.*** Madsen Works has used Symons Screens exclusively (unless otherwise specified by customer) since 1930. Here's why, says W. M. Madsen, V.P., Research & Development:—"Accuracy of sizing with a minimum of carry-over; simple to adjust; easily serviced; rugged, simple, accessible and well designed."

◀ ***Used Exclusively by WARREN BROTHERS CO.*** "In the past eight years we have installed close to forty Symons Screens of various sizes. Our satisfaction with their performance must be apparent," says R. C. Paine, Chief Engineer.

▲ ***Preferred by KOEHRING-WATEROUS, LTD.*** "We use Symons Screens because they have complete customer acceptance. We like the design which permits the drive unit to be mounted completely outside a dust enclosure over the screen, away from dust and heat," says N. L. Elliott, Manager, Road Equipment Sales Division.

▲ ***Specified by STANDARD STEEL CORP.*** "We utilize the Symons Screen on all our plants and find them to be especially suitable due to their ruggedness, high gradation control, and because the operating mechanism is away from the heat," says M. B. Freeman, Manager, Road Machinery Division.

NORDBERG MACHINERY

**NORDBERG**

CRUSHERS SYMONS SCREENS NORDBERG

**MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS**

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON
TORONTO • MEXICO, D.F. • LONDON • JOHANNESBURG

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA ·

See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

AMERICAN ROAD BUILDERS ASSOCIATION

SYMONS . . . *A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD*

© 1956, Nordberg Mfg. Co.

S256

## Just one of many Gar Wood 75B advantages in rock!

Rock output jumps when you put a 75B in the quarry. One big reason is Gar Wood's positive, independent chain crowd that gets maximum engine power into each load. Dipper retract is twice as fast as crowd speed. Since crowd mechanism is built in, conversion is fast and easy . . . nothing to remove except crowd chain! And here are other big 75B advantages for work in rock . . .

***Independent travel while swinging*** gives you extra mobility to speed loading. You can swing or hoist while you're moving up.

***Fluid coupling that absorbs shocks*** is available on the 75B. It forms a cushion to prevent damaging shock loads from reaching vital machinery. Permits smooth acceleration that increases production, reduces wear and tear on machine.

***Power steering for fast, easy operation.*** Easy to turn and maneuver regardless of quarry floor conditions.

***Rugged design reduces maintenance.*** Massive crawler base takes extreme shock and strain . . . heavy-duty conical hook double rollers eliminate pin strain and rocking under load.

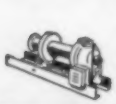
These and many other 75B advantages reflect Gar Wood's long experience in designing and building the finest ¾ yard machines on the market. Get the complete story from your Gar Wood distributor, or write direct to Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

## GAR WOOD INDUSTRIES, INC.

**Wayne, Michigan • Findlay, Ohio**

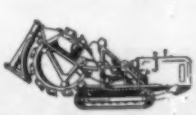
**Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.**

Gar Wood-St. Paul Hoists & Bodies


Gar Wood Winches

Gar Wood Tractor Equipment

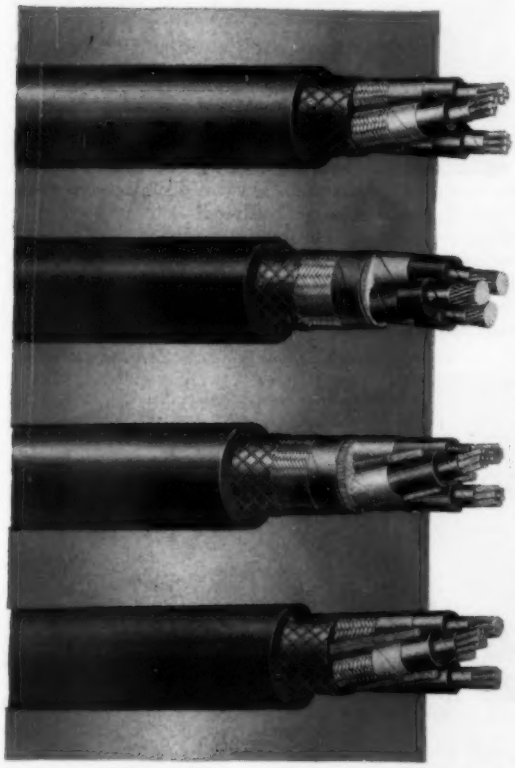
Gar Wood-Buckeye Spreaders


Gar Wood-Buckeye Ditchers

GarWood

# Avoid costly "Downtime" with U. S. Royal Shielded Portable Power Cables

Shielded Portable Power Cables, Type SH, are preferred (or generally used) for the distribution of power to portable equipment at voltages above 2000. Shielded cables provide greater protection to the insulation and are safer to handle than other types of portable cables. These cables are of the four types listed below. Where maximum safety is desired, type SH-D cables are recommended.



**U. S. Royal SH-A Cables** consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S Uskorona-1 oil base compound, and covered with colored tapes and a braided coated copper shield. The conductors are then cabled and covered with a reinforced jacket of 60% black neoprene. The shielded braid over each insulated conductor eliminates corona cutting by static discharge through equalization of surface stresses.

**SH-B** cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound plus colored tapes. Conductors are then cabled with jute fillers, covered with a rubber-filled tape, a braided coated copper shield and reinforced 60% black neoprene jacket. The shielding braid protects the men handling the cable in the event of fault currents.

**SH-C** cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape. The conductors are cabled with jute fillers and with the specified fabric-covered ground wires in the conductor interstices; then covered with a rubber-filled tape, braided coated copper shield and a reinforced 60% black neoprene jacket. Ground wires permit grounding of equipment and provide an adequate low-resistance path for short circuits, thus insuring circuit breaker operation. The grounded equipment provides protection to workmen under fault conditions.

**SH-D** cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape and a braided coated copper shield. The conductors, together with fabric-covered grounding conductors, are cabled and covered with a reinforced black 60% neoprene jacket. The conductor shielding, when properly grounded, equalizes surface stresses and draws off all capacity charging currents, insuring safety in handling. An adequate low-resistance ground for the equipment is provided by the grounding conductors.

**All shields and grounding conductors, when used, should be properly and thoroughly grounded.**

The constant dragging, flexing, twisting and bruising encountered in heavy service will not bother U. S. Royal Shielded Cables. You'll find that U. S. Royal never runs you into "downtime"—it's the most dependable, efficient cable you've ever used.

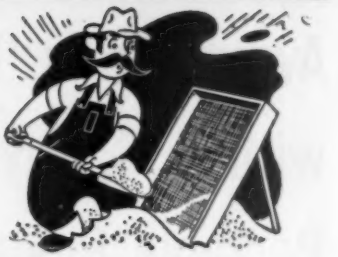
United States Rubber Company is the only electrical wire and cable manufacturer to grow its own natural rubber, make its own synthetic rubber and its own plastics. This permits control of the production process—resulting in a quality product.

Write to us at Rockefeller Center, New York 20, N. Y., for free catalog, "U. S. Electrical Wires and Cables," describing the complete line.

**Electrical Wire & Cable Department**

# United States Rubber

# Screenings



by Ray L. Smith, Jr.

DON'T Be Guilty of "Idle Silences." Maybe that headline intrigues you, as it did us. We saw it in a booklet, somewhere, and went on to read: "Benjamin Franklin once said, 'As we must account for every idle word, so must we account for every idle silence. Most of us fail to reach the heights of social, professional, or even domestic success because of errors of omission or idle silences.' "

We think we know what Old Ben meant, and it certainly applies to business as well as to life in general. Saying nice things to customers and those with whom we have other business contacts certainly helps to improve public relations—but saying them sincerely, of course. It's the courtesies extended which *could be omitted* that carry the most good will—although most of us never seem to find the time for them. Yes, Mr. Franklin, we think you said something worth remembering. Those *unnecessary* letters, for example—the ones we don't have to write! Letters of appreciation, letters of sympathy, letters of congratulations! A customer feels mighty good to get one, especially when not expected. And "feeling good" has a lot to do with orders!

### Sign of Spring

POLICE recently thwarted a "sinister plot" by fraternity boys to seal up 100 UCLA coeds in their sorority houses.

Six-foot-high concrete block walls were erected in the doorways of the Kappa Alpha Theta and the Pi Beta Phi houses. Police came in a hurry when one of the girls opened a door and found herself staring at a blank wall.

No arrests were made, but, campus police said if the closures had not been discovered early, they would have been "set" by the time the sorority women left for morning classes.

Evidently the lads had been reading up on some do-it-yourself literature for the job was completed in a very workmanlike manner—to last a lifetime. The seals were made of standard blocks, reinforced and laid in a conventional bond.

Guess you can't blame the UCLA boys for locking up their dates. The "dreamboats" probably had launched a crusade for heavier dates and the poor guys were just plain broke.

### Superheated

GRADUATES of the Eutectic Welding Institute and other welders have elected stage, screen and TV star, Jayne Mansfield, as "Miss Welder of 1956."

With the development of "Low Temperature Welding Alloys," it beats us how anyone can expect a low-heat weld to stay put with Jayne hanging around in *that* get-up.

In case the connection between the shy young woman and the flute (that's the thing with the straight lines, Bub!) may elude our readers,

we'd like to explain, she's evidently trying to make the hose and nozzle dance to the tune of her pipe. So far as we can see, the hose just isn't there. To our way of thinking, it's only too evident there are other things more worth tooting about.

We record this, strictly on the off chance that it may bring hope to some poor devil who is laboring under the delusion that welding is completely unexciting.

### Potpourri and Succotash

Entering the captain's cabin, the quartermaster saluted and said: "A message from the admiral, sir." "Read it, read it" snapped the captain.

QM (reading): " 'You fool! You congenital idiot! Is it beyond your feeble power to execute a simple order?' "

Captain (hastily): "Rush that message below and have it decoded."

The worried patient was visiting the doctor for a checkup. Said the doctor: "Do you smile at your troubles as I advised?"

The patient replied: "Yes, and the boss warned me three times to wipe that silly grin off my face and get to work."

She was an exasperating customer and hadn't bought a thing. "Why is it," she snapped at last, "that I never get what I ask for in your shop?"

"Perhaps, madam," said the assistant, "it's because we are too polite."

An old Chinese fable tells of Two Tears that were floating down the River of Time.

"I," wept the first, "am the tear of a woman who lost her husband to another woman."

"Why should you mourn?" said the other. "I am the tear of the woman who got him."

Two girls were, as usual, discussing men. Stated one, "Men are all alike." The other gal, from the deep South, replied, "Men are all Ah like, too."

Harry Lauder had gone to buy a steak at a meat market. The butcher showed him one and spent five minutes praising it and ended by saying, "It is as tender as a woman's heart." Thereupon Lauder said, "I'd better take ham."

# Ask Cedarapids Built by IOWA Owners about Profit...

Someplace near you there's sure to be a Cedarapids plant working. Ask the owner what he thinks about the performance of that plant!

We'll bet you get answers like these—

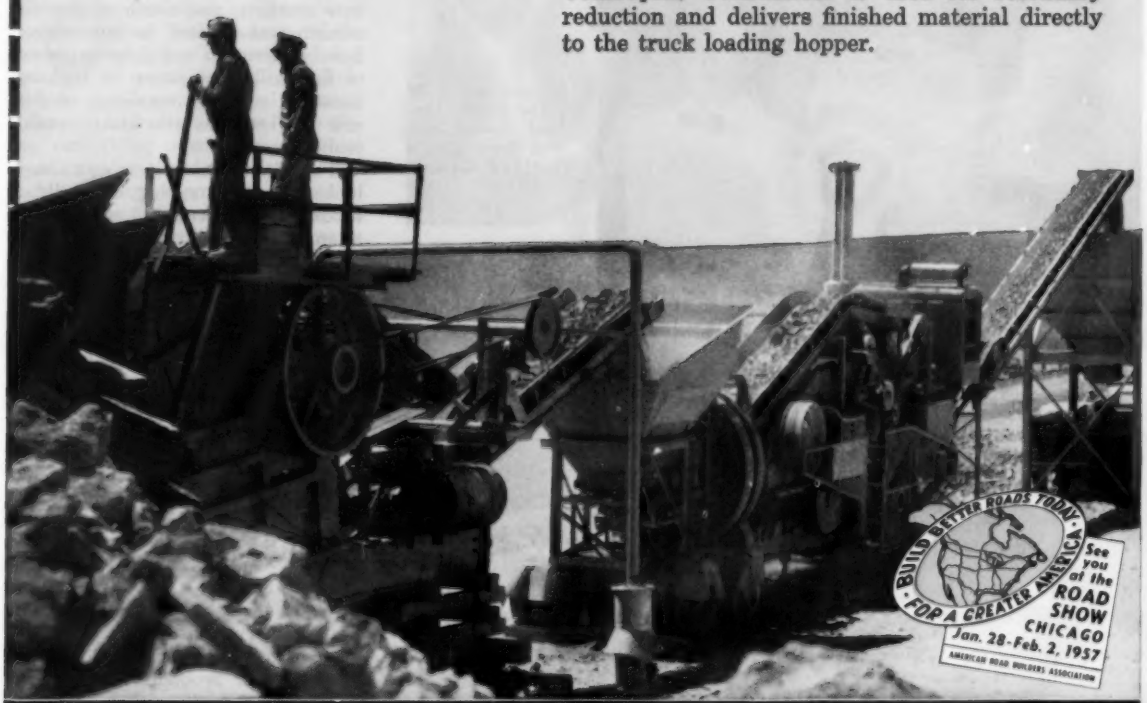
*"We're crushing 100%, averaging 105 tons per hour, with no maintenance costs in 12 months' operation"*—a New York Commander owner.

*"The only competition I have around here is another Cedarapids plant"*—a Wisconsin crushing plant owner.

Call your Cedarapids distributor for the location of the nearest working Cedarapids plant—then ask him to explain the Cedarapids features that will make more money for you.

## SUSQUEHANNA QUARRY CO. produces 150 TONS PER HOUR of crushed rock for Pennsylvania Turnpike Extension

Set up to produce about 75,000 tons of crushed stone for sub-base on the north end of the Pennsylvania Turnpike Extension, this 3-unit Cedarapids plant is turning out 150 tons per hour for Susquehanna Quarry Co., Millersburg, Pa. Rock from an abandoned strip mine is fed to the 25"x40" primary jaw crusher over a vibrating grizzly which bypasses fines before they reach the crushing chamber to permit greater production of crushed material from the Portable Primary unit. The versatile Cedarapids Commander is used for secondary reduction and delivers finished material directly to the truck loading hopper.




# IOWA MANUFACTURING COMPANY

## Cedar Rapids, Iowa, U.S.A.

# Development of New Markets Stressed At 54th National Lime Assn. Convention

## Boca Raton Site Approved By All Attending

By WALTER E. TRAUFFER

The new president of N.L.A., M. A. Rikard of the Southern Cement Co., Birmingham, Ala. (left), with Mr. and Mrs. Wallace E. Wing of the Marblehead Lime Co., Chicago.

Mr. and Mrs. R. M. Slater (left) and Paul Sunderland (Ash Grove Lime & Portland Cement Co.).

At this table at the banquet are: Amos B. Miner (National Gypsum Co.), immediate past president of N.L.A., and Mrs. Miner; Mr. and Mrs. C. H. Ellison Jr. and Mr. and Mrs. M. A. Rikard (Southern Cement Co.); Mr. and Mrs. J. H. Robinson (Gypsum, Lime & Alabastine Ltd., Toronto, Ont.); and Irving Warner (Warner Co.).

Another ON THE SPOT Report

THE National Lime Association held its 54th annual convention at a delightful spot, the Boca Raton Hotel, Boca Raton, Fla., from April 19 to 21, 1956, and treated those attending to an excellent program. The lime industry in 1955 set a new record in production, and 1956 promises to be even better, but the industry is not resting on its laurels. The keynote of the meeting was the development of new markets, and much of the discussion was devoted to this subject. Special attention was given to the use of lime-soil stabilization in highway construction. The regaining of former markets was also given considerable attention.

The lighter side was not overlooked at this meeting, and all attending were given full opportunity to enjoy the many types of recreation available at this outstanding resort. For those so inclined there was a world-famous golf course, ocean bathing, fresh water swimming, deep sea fishing, boat cruises, etc. Social events included a group steak dinner at the Cabana Club on the beach, and the annual banquet, both followed by dancing under the stars.

**President's Address** In his opening address, Amos B. Miner, National Gypsum Co.), president of the National Lime Assn., pointed out that 1955 was the most prosperous year in history for the lime industry, and that prospects are even better for 1956. Production is now the real problem, but research

and promotion should not be overlooked. Mr. Miner stated that the industry has lost much of its former building and agricultural market to gypsum and cement and pointed out that the association's joint research program with the U. S. Bureau of Standards is aimed at recapturing some of this lost ground. The activities of the N.L.A. research committee provide a good background of information for deciding on the research needed. Mr. Miner mentioned lime-soil stabilization as an example of a large potential market. According to Mr. Miner, N.L.A. now represents 85 percent of the open market production of lime in this country.

**Boynton's Report** In his report on association activities Robert S. Boynton, general manager of N.L.A., had mostly good news for his listeners. The production of 9,230,000 tons of lime in 1955 was a new record, and at the present rate the 1956 figure will approach 10,000,000 tons. He warned producers not to be too proud of this record, as portland cement production increased more than lime's 56 percent in the last 10 years, and many other building products were up more than 100 percent in the same period. Mr. Boynton pointed out that 77 percent of all the lime produced now goes to the chemical industry, and the association is doing everything possible to publicize it as a major chemical material.

Mr. Boynton reported in detail on the progress being made on various types of lime research. The fundamental research at M.I.T. is badly needed and should be of great practical value in improving the quality of lime; and the new Murray plastic test for lime should also prove valuable. A program is being started at Purdue University on the uses of lime in correcting atmospheric pollution. At Rutgers University the research on sludge volume reduction and scale precipitation in neutralization is proceeding satisfactorily. A report is also expected soon on tests on the elasticity of mortars.

There is, said Mr. Boynton, a real future in lime-soil stabilization, and this matter is being pushed actively from all angles. Tensile strength tests at the University of Texas have been impressive, and a new mix of lime, clay-shale aggregate, and sand and gravel has real promise for highway pavement, as well as for base. The field work done by Conard M. Kelley, N.L.A. highway engineer, in the last seven months has also shown excellent results. Nearly 100 miles of roads using 13,000 tons of lime can be traced to his work. Mr. Boynton stated that this is only a beginning, and that if producers follow through on this new market, sales within 10 years could equal sales for mortar, which are now nearly 600,000 tons annually.

In closing, Mr. Boynton stressed the rapidly growing importance of research due to the advances in technology and to competitive materials. Centralized research by associations is the only answer to these conditions, he pointed out, adding that associations of competitive materials have established laboratories and are conducting extensive research.

Another banquet group included, Mr. and Mrs. Kennedy Ellsworth (U. S. Lime Products Corp.); Mr. and Mrs. W. J. Cabaniss (Southern Cement Co.); Bolton L. Corson (G. & W. H. Corson, Inc.); D. H. Shearer (Southern Cement Co.); and Mr. and Mrs. R. E. Pflaumer (American-Marietta Corp., Chicago).

Reed C. Bye (Warner Co., Philadelphia) and Robert S. Boynton, general manager of N.L.A.

Also attending the banquet were: Mr. and Mrs. R. M. Slater (Ash Grove Portland Cement Co.); Mr. and Mrs. Wallace E. Wing (Marblehead Lime Co.); Mr. and Mrs. G. E. Robinson and Mr. and Mrs. A. H. Robinson Jr. (Austin White Lime Co.); and Mr. and Mrs. R. R. Worthington (International Paper Co.).

**Officers and Directors** At this meeting M. A. Rikard (Southern Cement Co., Birmingham, Ala.) was elected president, succeeding Amos B. Miner (National Gypsum Co.), who had served three years. Paul Sunderland (Ash Grove Lime & Portland Cement Co.) was re-elected treasurer. Also re-elected was the association's staff as follows: general manager, Robert S. Boynton; assistant secretary, Georgia M. Coffman; chemical engineer, Kent Jander; highway engineer, Conard M. Kelley.

The executive committee, in addition to Mr. Rikard, will be as follows: Reed C. Bye (Warner Co.); Bolton L. Corson (G. & W. H. Corson, Inc.); K. L. Hammond (Keystone Lime Works, Inc.); C. C. Loomis (New England Lime Co.); Amos B. Miner (National Gypsum Co.); Charles Rarey (Marble Cliff Quarries Co.); and Wallace E. Wing (Marblehead Lime Co.).

The following members comprise the board of directors of N.L.A.:

*District 1*—C. C. Loomis, New England Lime Co.

*District 2*—Bolton L. Corson, G. & W. H. Corson, Inc.; Claude H. Barrick, S. W. Barrick & Sons, Inc.; and E. D. Williams Jr., H. E. Millard Lime & Stone Co.

*District 3*—Amos B. Miner, National Gypsum Co.; Reed C. Bye, Warner Company; and J. G. Hawthorne, Mercer Lime & Stone Co.

*District 4*—Charles A. Hartman, Peery Lime Co.; and Ralph L. Dickey, Chemstone Corp.

*District 5a*—F. J. Collins, Kelley Island Co.; and Franklin Witmer, Ohio Lime Co.

*District 5b*—Charles E. Rarey, Marble Cliff Quarries Co.

*District 6*—L. W. Carmouche, Dow Chemical Co.

*District 7*—E. H. Siebrasse, Menke Stone & Lime Co.; R. F. Mathews, Mississippi Lime Co.; and Wallace E. Wing, Marblehead Lime Co.

*District 8*—Michael Brisch, Rockwell Lime Co.

*District 9*—Paul LaLiberte, Cutler-Magner Co.

*District 10-11*—M. A. Rikard, Southern Cement Co.; and G. L. Scott Jr., Alabaster Lime Co.

*District 12*—R. W. Hunt, Southwest Lime Co.; and Paul Sunderland, Ash Grove Lime & Portland Cement Co.

*District 13*—J. S. Offutt, U. S. Gypsum Co.; and G. E. Robinson, Austin White Lime Co.

*District 14*—not decided.

*District 15*—D. G. Ellis, Westend Chemical Co.; and D. M. Kerr, Kaiser Aluminum & Chemical Corp.

Left to right: D. H. Shearer (Southern Cement Co.); K. L. Hammond (Keystone Lime Works); and one of the speakers, Dr. A. P. Black of the University of Florida.

**Safety** It was announced at this meeting that the winners in the association's safety contest for 1955 had not yet been determined, but that the results would be announced soon. The trophies will be awarded at the Fall Operating Meeting. Kent Jander, chemical engineer for N.L.A., mentioned the sharp drop in both accident frequency and severity in the last 10 years to less than half the former figures. The actual cost of accidents, he said, is mostly hidden, and runs 4 to 8 times the direct cost. Included are such items as time loss, loss in earning power, economic loss for families, time loss of fellow workers, etc.

A feature of the meeting was an address by Robert Pflaumer, president of the American Marietta Corporation, Chicago, a concern which has expanded into many fields and which has in the last few years taken over several major lime-producing companies. After getting a doctor's degree in chemistry, Mr. Pflaumer also worked in production and sales. He joined American Marietta in 1948 as vice-president in charge of research and development, becoming president in 1953.

Two visitors from abroad were Dr. N. V. S. Knibbs (left), Longfield, Kent, England, and B. J. Gee (Seattle Limes Ltd., Yorkshire, England), one of the speakers.

Mr. Pflaumer's subject was the problem of managing expanding enterprises. The growth of large companies through mergers is, in his opinion, inevitable, for one reason because a company must pass a certain size before it can afford the research and other investigations necessary to growth and progress. The greater ease of getting financial credit is another advantage of a large company, and the broad base afforded by diversification is a necessity in these rapidly changing times. The biggest disadvantage, in his opinion, is the loss of personal contact between top management and employees, which can be dangerous if management allows itself to become isolated.

**Truth in Research** In *The Truth Will Out,* Walter C. Voss, professor emeritus, building construction, and lecturer, Massachusetts Institute of Technology, pointed out the need always to seek truth in research. The search for the secrets of Nature has always been one of the chief concerns of man, and as a result we now have a vast store of methods and knowhow on the procedures to follow. The research on lime, he said, has made progress over the years because its basis was the search for truth, and this basis must always be adhered to if further progress is to be made.

As an example of research which brought the truth into sharp focus, Mr. Voss described the work done in connection with the question of the rupture of masonry work by the expansion due to chemical reactions. He used a series of charts of autoclaved cement-lime mixtures to show clearly the fallacy of applying empirical test requirements indiscriminately. A movie demonstrated how slides can be used to show the expansion of lime mortar.

Mr. Voss also described some of the problems which still are unsolved in the manufacture of lime for chemical purposes, for agricultural use, and in the newest effort—soil stabilization. There we are confronted with matters involving fundamental research, and knowledge of many of these unknowns will greatly aid in the construction field. According to Mr. Voss, "One can only suggest such a program, knowing full well that to anticipate the direction truth may take is exceedingly difficult. As a start, but subject to revision as morsels of truth emerge and force a change of attack, I wish to propose a program which may take a very

# HOW TO STOCKPILE 25 TONS

# *A MINUTE*

Pittsburgh & Conneaut Dock Co. stockpiles a million tons of iron ore during the summer months, to create a reserve supply when ore boats cannot satisfy extreme demands. Four CAT* DW21s with Scrapers handle 1500 tons per hour for this Conneaut, Ohio, firm. That means a DW21 pulls away from the Stephens-Adamson conveyor every minute with a 25-ton load.

This company works two eight-hour shifts, six days a week during the navigation season. Its equipment must do a lot of work fast, and stay on the job. That's why a company official says: "We've had 12 years of experience with Caterpillar equipment. We considered other makes, but found DW21s did the job best."

Now there is a new and improved DW21 (Series C) with 300 HP (maximum output) Turbocharged engine. It has 10% greater rimpull and new, wide-section 29.5-29 tubeless tires for maximum traction. With the big-target No. 470 LOWBOWL Scraper (25-yd. heaped capacity), here's an ideal team for efficient materials handling and for earthmoving jobs in slack seasons. For jobs that are exclusively stockpiling, many firms find that DW21s with Athey haulers pay off.

If you want fast cycle times and traditional Caterpillar stamina, investigate the DW21 today. Your Caterpillar Dealer has full details and on-the-job proof that these big yellow rigs can do more work in less time at lower cost on *your* operation. And count on him for skilled service and parts you can trust.

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long time to complete, if indeed we can ever complete it, but which will allow us gradually to unravel the intricacies of natural forces and reactions. Such a program must bring to bear all of our present facts and facilities to the end that as it evolves, you will be able to correct your processes, evaluate your natural resources, and expand the uses of your products. This program, presented here as a tabulation, from which the most promising elements may be singled out for present solution, will bring to light the uses of lime in all fields and perhaps suggest others. The accompanying tables show the scope of basic research required.

"Continued efforts in such a direction will result in the emergence of truth in many fields. Unless your efforts are based upon incontrovertible and acceptable truths, you will not be able to expand the service which lime could contribute to our economy."

**Percentage Depletion** In *Percentage Depletion Developments,* J. Milton Cooper tax counsel for N.L.A., pointed out some recent developments of great significance. The major general legislative activity occurred in connection with H.R. 9075, the Highway Revenue Act of 1956. The association, he said, co-operated with other groups in making representations before Congress, with the result that the increased taxes on diesel fuel, gasoline, and tires will apply only to highway-type vehicles and the new tax on heavy trucks will apply only to those registered for highway use.

According to Mr. Cooper, there is a group of senators and representatives who fail to see the justification for the percentage depletion allowance for the extractive industries. He also mentioned the bills recently introduced—one to reduce the depletion allowance for oil and gas from 27½ to 15 percent, and another which would reduce the allowance for all these industries, with 3 percent for limestone. Producers were advised not to be unduly alarmed but to remain vigilant and be in readiness for concerted action to protect this important and equitable tax treatment.

On general tax legislation, Mr. Cooper doubted that there will be any major development before Congress adjourns this year; but, as it is an election year, there may be some effort to reduce income taxes.

The speaker pointed out that the regulations issued by the Treasury Department under the 1951 Act imposed an end use test, and efforts are continuing to get this test eliminated. No predictions can be made, but two recent decisions show that the taxpayer can successfully fight Treasury Department interpretations. The 1954 Code makes it easier to establish the applicable rate for limestone, but the Treasury Department has not yet issued its new regulations under this code. These regulations should be carefully studied when they come out.

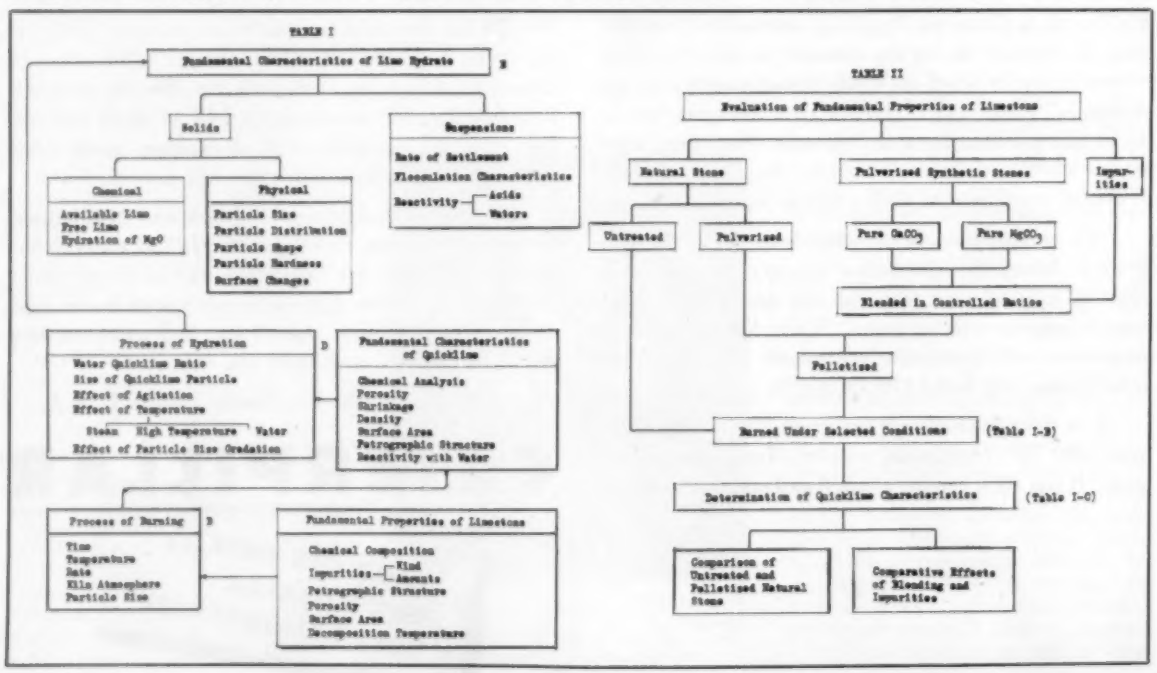
The problem which Mr. Cooper expects will give the limestone industry the most trouble in the percentage depletion field is the determination of a "representative market or field price." This problem will arise often where some of the limestone produced is sold without further processing and the balance is calcined. He warned that the Treasury Department will in any given case resolve all doubts in favor of higher taxes, and again pointed out that the courts are open to the taxpayers.

In closing, Mr. Cooper said that this is no time for complacency. Not only is the Treasury questioning the justification for percentage depletion, but there is also a similar climate developing among so-called tax philosophers, who have been given considerable publicity.

**Lime-Soil Promotion** In his report on the *Lime Stabilization Promotional Program,* Conard M. Kelley, highway engineer for N.L.A., first gave a brief resume of his experience in this field, first with the Armed Forces and later with the Texas State Highway Department. His every contact, he said, sells him more firmly on the future of lime stabilization. He also emphasized that the main job to be done is education, as many highway engineers are still unfamiliar with this practice.

According to Mr. Kelley, Texas built its first lime-stabilized test section in 1947, but little interest was aroused at the time. The U. S. Army Engineers were the first to realize its

Tabulation of research efforts in lime applications, as described by Mr. Voss.



value, and started the present trend. Texas this year accepted lime as an alternate to cement stabilization and built a section in the Panhandle, where there is a wide range of weather. In spite of the fact that this was laid in severe winter weather, this test section worked out so well that another 19-mile section is being built.

Louisiana, said Mr. Kelley, has been a leading user of lime for this purpose. The first test section was completed late in 1955, and there are now completed (or under contract) 50 miles of road 8 to 12 in. thick. By fall, a total of 90 miles is expected to be completed. Many other states, including Kansas, Nebraska, Alabama, Virginia, Maryland, and New Jersey, are interested and are already making tests. Others are interested but slow to try new ideas.

The expanded highway program which seems sure to pass Congress would nearly double the amount of road construction. Mr. Kelley feels that this program would require the use of many borderline aggregates which would be ideal for lime. Lime is also attractive to contractors as it can be used with almost any soil, is easy to work with, and is slow-setting. The low cost of lime stabilization is also an important advantage.

**Lime's Role in Water Treatment** Dr. A. P. Black, water plant consultant and head, department of chemistry, University of Florida, told of *The Role of Lime in Water Treatment*. He pointed out that $3,000,000,000 is being spent annually on research, which is constructive but also destructive, because progress is so rapid that a plant can become obsolete before it gets into operation. Because of its unique combination of properties, lime seems unlikely ever to become obsolete. However, Dr. Black said that the industry will be wise to keep searching for new uses, since it may lose some of the present ones.

According to Dr. Black, the use of high-calcium lime for water softening is big business in Florida, over a hundred plants having been built for new subdivisions alone. He described the role that lime plays in water softening, removing free carbon-dioxide, softening magnesium, selectively removing calcium and magnesium, etc. He also pointed out that aeration is harmful in the process and that more lime should be used instead.

Lime also acts as an accessory coagulant and is used in the stabilization of treated water, bringing the pH down. In some cases some of the high-calcium lime is replaced with dolomitic lime, with better results. There are, he said, more than 600 water supplies in this country which carry more fluoride than they should, and it is important to get this down. High-magnesian lime does this well, and comprises a new market.

The bulk handling and storage of lime used for water treatment is a problem, especially for small plants. A new development, said Dr. Black, is the use of powdered quicklime without slaking — in bags. Three years of use has proved this product, and there is a substantial saving in cost. This use creates another new market for lime, but this fact is counteracted by the new household compounds which work equally well in hard or soft water. Dr. Black also pointed out that sludge recalcining is practical only where volume runs 80 tons daily or more.

**Arbitrating Disputes** In discussing *The Advantage of Arbitration*, John C. Best, recently retired as vice-president of the National Gypsum Company, pointed out that arbitration is often confused with mediation and conciliation. Actually, it is not permissible for an arbitrator to mediate or conciliate. Arbitration, he said, is the voluntary submission of disputes to an impartial party for final determination. Arbitration is prompt, simple, fair, economical, and timely. Disputes are usually settled in 40 to 60 days, while the courts are up to four years behind their calendars.

Arbitration is simple because it does not follow court procedure and is bound by no precedent or law. Any evidence can be introduced, and every effort is made to get the facts. The arbitrator must be impartial and reasonably expert in the field. It is economical because there is no jury, and the arbitrator usually gives his time free of charge as a public service. Also, said Mr. Best, arbitration is final; and it is very difficult

Charles Rarey (Marble Cliff Quarries Co.) and Conard M. Kelley of N.L.A.

Mr. and Mrs. Glenn Hawthorne (Mercer Lime & Stone Co., Branchton, Pa.).

This banquet group included: Michael Brisch (Rockwell Lime Co.); Dr. L. John Minnick (G. & W. H. Corson, Inc.); Mr. and Mrs. W. J. Barrett (New England Lime Co.); Georgia M. Coffman, Joann Hall, and Conard M. Kelley of N.L.A.; R. J. Pierson (New England Lime Co.), and Doris Pierson.

to upset an award. The only way this can be done is to prove fraud or corruption; gross error; lack of a fair hearing; or failure of the arbitrator to rule on a point when asked to do so, or to rule on one without being asked. Arbitration also has no audience, and there is little publicity.

The arbitrator can handle all cases except criminal, domestic, minors, and interpretations of the law. Most union labor contracts have an arbitration clause. From one to three arbitrators can be used on a case, and they are chosen from lists agreeable to both parties. The American Arbitration Association, according to Mr. Best, has 13,000 panel members, handling an average of 10 cases daily, ranging up to some involving millions of dollars. The alternatives to arbitration are, in the case of labor disputes, a strike, and in commercial cases, long and costly court proceedings.

**Vacuum Sewage Filtration** *Lime on Upgrade with Vacuum Filtration of Sewage Sludge* was discussed by Ellis K. Phelps, Komline-Sanderson Company. He said that the first problem is to get rid of as much water as possible, and lime is used to make the free water more extractable. With the present vacuum filters, operations can be carried on continuously. A movie showed the sewage treatment plant at St. Charles, Ill., where his company's equipment is used. Hydrated lime is mixed with water, 50 lb. to 50 gal., and measured into the sludge. This raises the pH to 9 to 12 with no odor, and by the use of a wire coil spring filter cuts the time requirement in half. As a result of using these methods, the plant now handles its load in 4 hours three days weekly, whereas it formerly had to run continuously. According to Mr. Phelps, the wider use of this equipment would increase the use of lime for sewage treatment.

**Foreign Developments** *Foreign Lime Developments* were described by B. J. Gee, director, Settle Limes, Ltd., Yorkshire, England. He said that England has a wide variety and large quantity of calcareous materials and that these are well distributed, so that plants need not ship far. As in this country, the larger plants have been highly mechanized; the smaller plants are struggling to compete and must eventually lose out. Many vertical kilns are used, and the problem is to dispose economically of the minus 6-in. undersize stone; cost and the small market for pebble lime makes the addition of rotary kilns uneconomical.

According to Mr. Gee, coal and coke prices have gone up, while quality has gone down, with the result that fuel is now half the cost of producing lime. Oil is becoming a possible fuel and is already being used in other European countries. Mr. Gee's company is using some producer gas with good results.

## LIME STABILIZATION PANEL

Lime stabilization of soils for highway base courses was the theme of this convention; and perhaps the most important meeting was the one on Friday morning, when most of the time was devoted to a panel discussion on all phases of lime stabilization. This discussion covered testing procedures, merchandising, competitive methods of stabilization, construction procedures, and the limitations of lime. The moderator of the panel was Conard M. Kelley, highway engineer of N.L.A.

**Testing Procedures** Testing procedures were discussed by Dr. L. John Minnick, chief chemist, G. & W. H. Corson, Inc., Plymouth Meeting, Pa. He declared that no construction materials get harder service than those used in highways, not only on the surface, but underneath as well. Suitable materials are often scarce, and there is much disagreement on methods of design and test. Dr. Minnick described the work being done by various laboratories on this subject, including his own, in which the use of fly ash with lime overcame some previous objections and gave excellent results with all types of soils.

Dr. Minnick described the various methods being used to determine the suitability of soils for lime stabilization, ranging from hand tests to a triaxial compression machine which determines lateral as well as vertical pressure. He illustrated the various types of failure when soil is not properly stabilized, and also described a stabilometer to determine lateral pressure and a cohesiometer, which measures shear strength or tension. The use of some methods also makes it possible to determine wheel loads without taking a specimen. In closing, Dr. Minnick urged the development and use of tests which fit lime and are not just adaptations of tests used for cement or other materials.

**How to Merchandise** J. S. Offutt, merchandise manager, industrial sales, U. S. Gypsum Company, Chicago, said that he became sold on soil stabilization when he saw the work in Texas. The huge road program, the shortage of cement, and the fact that any available materials can be utilized are in his opinion all excellent sales aids for lime stabilization. He pointed out that there is much basic work to be done before salesmen can start selling effectively. Getting a hearing for salesmen in such a case is important, and the work being done by Mr. Kelley and others is accomplishing this objective. Mr. Offutt pointed out that it is important to find the key man in a highway department who specifies types of construction and materials. Where trial jobs have been put in, these men are a big sales aid. In one case in Texas a carload of lime was donated for a test job and then followed up successfully by salesmen. Once a job is specified for lime, it is advisable to call on the contractors bidding on the job and assure them of co-operation and service. It is best to make these sales direct, but if the jobber's commission can be kept low, it might be advisable to work through him. In Mr. Offutt's opinion, if ordinary and sensible sales methods are used, a large and stable new market for lime can be developed.

**Competitive Methods** R. M. Slater, advertising manager (Ash Grove Lime & Portland Cement Co.), discussed *Competitive Methods of Stabilization.* Literally hundreds of products besides lime, cement, and asphaltic bitumens are being studied and promoted, either as a means of convenient disposal or as a possible enlarged market for products whose present usage is so limited that costs are high. These range from paper mill wastes to resins and chemicals; even lard and castor oil have been tried. Most of these products, Mr. Slater stated, have some merit; and, with the Bureau of Public Roads encouraging this type of research, many other products will be tested.

According to Mr. Slater, soil stabilization applies not only to base courses but also to surface courses which can carry traffic loads under all normal conditions. Theoretically the simplest method of stabilizing cohesive soils is to: (1) deprive the component particles of their water affinity, and (2) cement the soil particles together.

The materials most commonly used for stabilization accomplish both functions to a certain extent but generally do one better than the other. Portland cement is most widely used; it is an excellent bonding agent but does not impart water repellency to the treated soil, although it does reduce the affinity of the soil for water. Asphaltic bitumen supplies most of the desired characteristics, but its durability and stability are affected

by climatic variations. Calcium chloride has limited application under special conditions. Resins, said Mr. Slater, are effective in a wide range of soils but they must be used carefully. Only their high cost prevents them from being real competition.

None of the above materials, he said, is completely competitive with the manner in which lime accomplishes stabilization, and with its ability to react with the colloidal clay fractions of a soil to change physical characteristics and form a binder of definite cementing properties. Lime has the added advantage of increasing strength over a long period of time. The association, Mr. Slater declared, can well afford to carry on its efforts to capture this market.

**Summary** The last member of the panel to speak was Robert S. Boynton, general manager of N.L.A. In addition to summarizing briefly what had already been discussed, Mr. Boynton had many suggestions regarding the development, use, and promotion of lime for stabilization. He urged that producers, in their enthusiasm to promote, avoid overselling, as a good road gets only a fraction of the publicity given a bad one. Overpromising may breed carelessness and bad results, he reminded, and lime is not a magical material. Mr. Boynton cited experiments with vinsol resin, which were overpublicized. The result was that many bad roads were built. Actually, this product is good—if it is used properly in the right places.

With lime, Mr. Boynton stated, one mix and method of treatment may be excellent for one soil, whereas another soil a few miles away requires entirely different treatment, quantities, etc. Certain basic facts must be known about the soil, and all necessary tests must be made. He cautioned against doing this work in the coldest weather, as lime requires some seasoning for best results. Lime also should never be used alone with a sandy, friable soil. Fly ash, clay, or some similar material must be added. It must also be borne in mind that a lime-stabilized soil has little real abrasion resistance. If such a base is used, it must be properly cured before a sealing surface is laid. Just after the road is rolled and finished, an asphalt emulsion protective coat should be applied, and the wearing surface laid later. Good workmanship is necessary throughout. The soil must be suitably broken up and the lime must be well mixed in. Then the base must be thoroughly compacted and rolled. In closing, Mr. Boynton emphasized the importance of having salesmen know this basic fact, so that they can do a realistic selling job.

**Discussion** In the ensuing discussion Mr. Kelley said that in selling a project in a new area it is necessary first to get a laboratory test made, then to promote a test job on which several producers can cooperate, if this is desired. He also pointed out the need for better methods of getting lime from the plant to the road, and the necessity of preventing workers from being burned while using it. The recently developed method of slurrying is an improvement. While lime is a great aid in breaking down soil, it must be scarified to the desired depth. The lime should be placed along with water, and then manipulated. With the mechanical mixing methods now in use, he said, this can be done successfully to a depth of 12 in.

According to Mr. Kelley, both dolomitic and high-calcium limes have proved satisfactory for this use. He advised not bringing this fact into sales discussions, but to sell the use of lime. Most of the lime so used has been commercial hydrate, and much of the work has used bulk lime. Sacked lime, he said, has been used on jobs requiring up to 1,500 tons.

### New York Trap Rock Vessels Named for Veteran Employees

Three long-time employees of the New York Trap Rock Corporation were recently honored by the company when three all-steel barges were named for them in commissioning ceremonies held at Trap Rock's Newburgh, N. Y., shipyard.

The employees are Bernard Finn of Stony Point, N. Y., who will complete 40 years of service in July, and Samuel Peterson, Stony Point, and Loreto Quintiliani, Newburgh, N. Y., with 39 years of service each.

The new barges, first of ten to be delivered by the Richmond Steel Company, are valued at more than $80,000 each. They will bring the Trap Rock fleet to 213 barges—the largest fleet of its kind in the Hudson River and metropolitan New York area.

### Newly-Formed Cement Firm To Build Plant at Vicksburg

Officials of the newly-formed Mississippi Valley Portland Cement Company recently announced plans for the construction of a $4,000,000 cement plant at a site located about ten miles north of Vicksburg, Miss., on the Yazoo River. Capacity will be 1,500 bbl. per day, to be marketed in the lower Mississippi Valley area.

Frederic F. Mellan, consulting geologist of Jackson, Miss., reported that 670 of the total 1,100 acres of the plant site are underlain by limestone suitable for cement manufacture. Kent B. Diehl Sr., director and general manager of the new company, estimates that there are enough raw materials for a century.

LEE C. HAMILTON, formerly divisional sales manager of the Huron Portland Cement Company, Detroit, Mich., has been appointed assistant general sales manager, succeeding D. T. Meyers, who has retired.

RALPH F. DICKSON has been appointed divisional sales manager, Ohio and Wisconsin districts, succeeding Mr. Hamilton.

• For the construction of an eight-mile section of the Kansas Turnpike, Nelson Brothers Quarry, LaHarpe, Kans., will supply over 400,000 tons of crushed stone. Material is handled by a Model 3250 Manitowoc rock shovel equipped with a 2½-yd. bucket, shown here loading a LeTourneau-Westinghouse "Tournarocker" at an average rate of 22 tons every 1½ minutes.

# McCann's Island
## Aggregate Winning and Processing Plant

This article, describing the plant producing sand and gravel aggregates for the Warragamba Dam in Australia, originally appeared in the Sydney *Water Board Journal*. This plant is so outstanding in design and concept and incorporates so many unusual and interesting features that we obtained permission to reprint it. We believe that many of our aggregates producer readers will find in this article solutions to operating problems which are arrived at in different ways than those customary in this country.

Warragamba Dam is located about 35 miles west and inland from Sydney; it is being built for that city's Metropolitan Water, Sewerage and Drainage Board as a part of a widespread water supply system.—*The Editors.*

By G. E. S. BERTWISTLE,
A.S.T.C., A.M.I.E. Aust.

FOR the construction of Warragamba Dam no less than 1,400,000 cu. yd. of concrete are required, for which 2,500,000 tons of coarse and fine aggregates must be obtained. Fortunately a gravel deposit nearly 100 acres in area, known as McCann's Island, situated on the western bank of the Nepean River about 2½ miles downstream of where it is crossed by road and rail bridges, is available for the purpose. Here an aggregate winning and processing plant has been established of the most modern and up-to-date kind.

The plant consists of two parts, *viz.*, the winning plant to excavate the raw material and transport it to the primary feed hoppers, and the processing plant to process and feed it to the loading bins which supply the ropeway (12.3 miles long) by which the material will be conveyed to the dam. It has been designed to handle 375 t.p.h of raw gravel (up to 40 percent of which goes to waste as excess sand), and to feed aggregate to the ropeway at the rate of 170 t.p.h. for three shifts daily. The layout is illustrated in the accompanying flowsheet.

### WINNING OF RAW MATERIAL

The removal of the surplus sand overburden, the underwater excavation of large quantities of compacted gravel and sand, and the excavation of material above water level all require different types of excavating plants.

The sand overburden is most efficiently and economically moved over the distances involved at McCann's Island by means of self-loading vehicles, and for this purpose pneumatic tired Tournapull-scraper combinations have been provided. Each combination is essentially a large scoop towed behind a tractor. The scoop is lowered for loading, then raised for transporting to a suitable site, where the load is dumped.

The 5-cu. yd. dragline recovering gravel and sand from the river bed at McCann's Island.

Underwater excavation can best be performed by dragline excavators, and for this phase of the work a large "walking" type dragline excavator is being used. Powered by a 290-hp. diesel engine, this 170-ton Ruston-Bucyrus Model 5W dragline has a boom 120 ft. in length, enabling the 5-cu. yd. bucket to be thrown well out into the river. Electrically slewed, the dragline dumps its load into Tournapull rock buggy transport units which carry the material to the primary feed hoppers.

Unlike many large excavators which are fitted with conventional crawler tracks for traveling, the Sydney Water Board's excavator is fitted with large floats or "shoes" and travels by "walking." Taking 6-ft. steps, it travels at a speed of .18 m.p.h.

To supplement this excavator in both under- and above-water excavation, a 2½-cu. yd. Link-Belt excavator, purchased originally for excavation at the dam, has been equipped as a dragline. A number of ¾-cu. yd. excavators will also be put to work as required, to maintain an adequate winning rate.

Some of the above-water excavation is also being carried out by Tournapull-scraper combinations with four-wheel pneumatic-tired Tournadozers, to assist loading by pushing the scoop from behind.

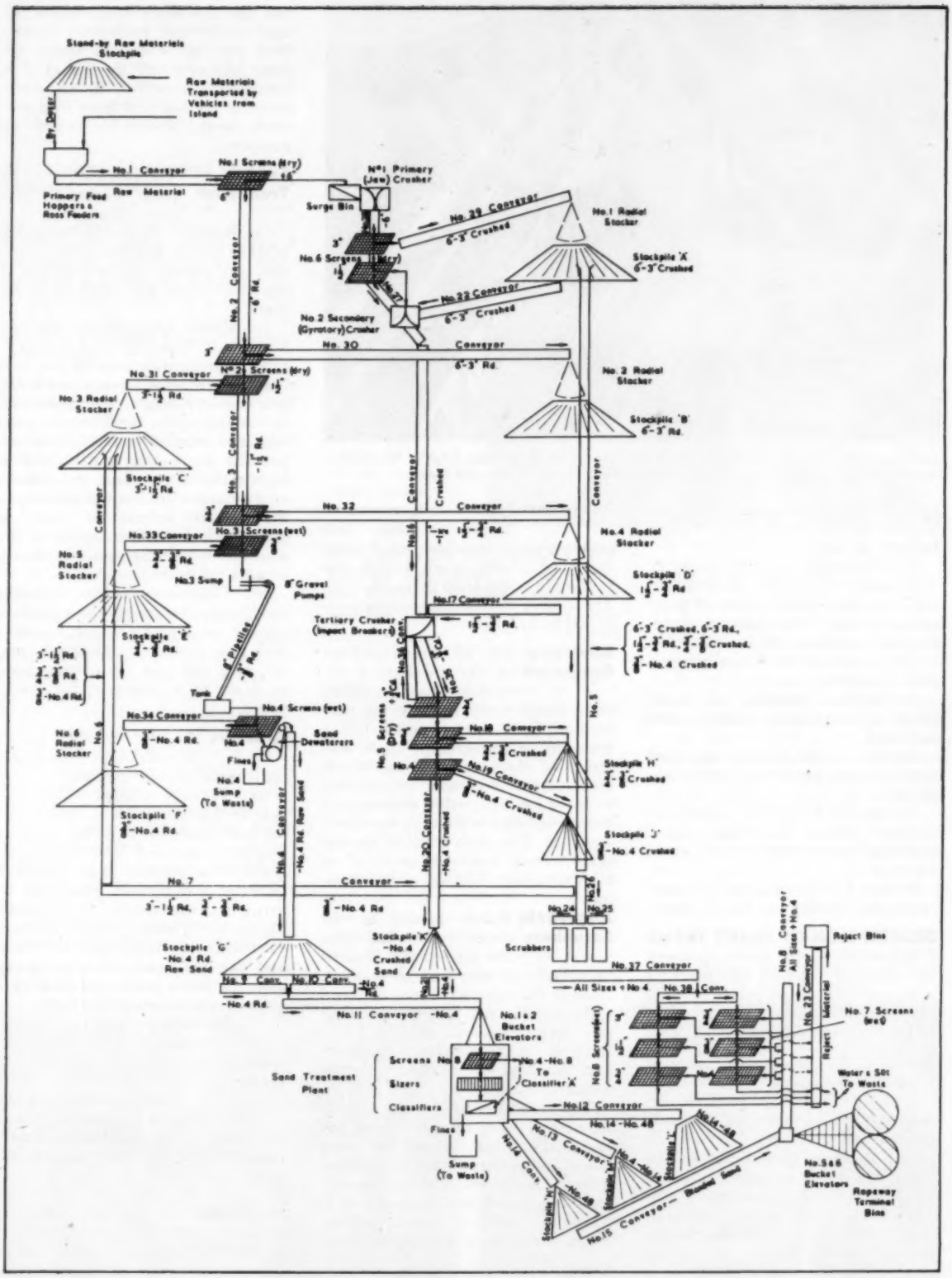
Maintenance of roads and general cleaning up duties are performed by graders, tractors, and Tournadozers.

### PROCESSING OF AGGREGATES

The purpose of the aggregate processing plant is to separate and wash raw river gravel into the required fractions of clean, accurately graded gravel and sand.

Large stockpiles are necessary to permit continuous feeding to the ropeway when processing is held up due to electrical or mechanical failure, floods or any other reason. Stockpiling will also permit continuous three-shift feeding to the ropeway even though processing may be carried out for only two shifts as proposed. It will also cover fluctuations in the grading of the raw deposit, which at times may be deficient in certain sizes.

A crushing plant has been installed to supplement those fractions of gravel and coarse sand which are short in the raw deposit; boulders




The flow sheet of the aggregate plant set up at McCann's Island, 35 miles west of Sydney, Australia, for the construction of Warragamba Dam.

Looking in the direction of flow. In the foreground is No. 2 conveyor (right). The crushed gravel conveyor at the left, and the main electrical conduit is between them.

larger than the maximum 6-in. size required for the dam will be crushed for this purpose.

It is essential that the failure of any single item of the plant should not cause the whole system of processing to cease. The plant has therefore been constructed in four main sections, each of which can be operated separately, viz.:

Section A—Processing and stockpiling of round and crushed gravel and sand.

Section B—Reclaiming raw and crushed sand, processing, and stockpiling.

Section C—Reclaiming round and crushed gravel, scrubbing, check screening, and feeding to the aerial ropeway.

Section D—Reclaiming processed sand and feeding to the ropeway.

## DESCRIPTION OF PLANT TERMS

Before tracing the various paths of the material through the plant, a brief summary of the principal items of equipment will be given as an aid to later description.

**Radial Stackers** Six electrically operated belt conveyor stackers are installed to stockpile aggregate. While these are virtually inclined belt conveyors, they have the added ability of pivoting about the lower end and so covering a larger area and building larger stockpiles. The discharge end being capable of being raised or lowered also lessens the risk of fracturing the falling gravel. The length of each stacker is 100 ft., the maximum height of lift over 30 ft., and the greatest load to be carried 100 t.p.h.

**Conveyors** Thirty-eight electrically-driven rubber belt conveyors are installed, the belting exceeding 13,000 ft. in length and varying in width from 36 in. to 18 in. The longest conveyor is approximately 800 ft. in length.

**Screening Equipment** The 19 screens used are of the mechanical vibrating type, consisting of a frame carrying decks of wire mesh screens (referred to as cloths) mounted on an eccentric shaft. Rotation of the shaft sets the screen oscillating, thus causing the material to move forward, either passing over the screen cloth or through the screen openings. The cloth mesh of the various screens varies from 6 in. to approximately 3/16-in. clear openings.

**Aggregate Scrubbers** Before passing to the ropeway terminal bins, the aggregate is cleaned by cylindrical scrubbers or washers. Each of the three scrubbers, designed to handle 85 t.p.h. of gravel, consists of a large horizontal cylinder 20 ft. by 6 ft. in diameter, chain-driven and powered by a 24-hp. electric motor.

The scrubbers are of the contra-flow type, gravel being fed in at one end and carried forward by worm plates and perforated buckets against a flow of water led in at the opposite end. The gravel finally passes out to a conveyor, while the water, carrying slimes, flows out at the opposite end.

**Sand Dewaterers** Three sand dewaterers serve the dual purpose of removing surplus water from the raw sand and unwanted fines. Water and sand are fed into the dewaterer tank, where the sand settles out. Perforated buckets then pick up sand and water, the latter draining off as the sand is raised to a conveyor. Excess water carrying surplus fines flows to a concrete sump, thence to waste by pumping.

**Sand Treatment** The sand treatment plant consists of three main items:

(a) **Screens**—Similar in operation to those earlier described, their function is to screen out the fractions of sand too coarse for handling in the sizers.

(b) **Sizers**—Sand smaller than No. 8 mesh (3/32-in.) is sized hydraulically, its separation into the required fractions by wire screens not being practicable, owing to the small particles clogging the small screen openings. Fed from the screens, sand enters the sizers and is deposited in eight different fractions, the coarsest at the narrow feed in the end where the upward velocity of water is greatest, and the finest sands at the wide end where the upward velocity of water is least.

(c) **Classifiers**—After receiving sand from the sizers, the classifiers remove most of the water, together with any remaining unwanted fines, silt, etc., and pass the clean graded sand on to a conveyor for stockpiling.

**Crushers** In the crushed gravel section six machines form three distinct groups:

(a) **Primary crusher**—The purpose of this 36- by 24-in. roller bearing jaw crusher is to break up large boulders screened from the raw gravl to a product from which a quantity of 6- by 3-in. gravel can be extracted, the residue being pased for further crushing. The machine is electrically operated, weighs 29 tons, and has one fixed and one moving jaw, the latter being operated by a 10-in. diameter eccentric shaft.

(b) **Secondary crusher**—This gyratory machine crushes either the material passed on by the primary crusher or materials fed to it from Stockpile A (see flow sheet), when primary crushing is not taking place. It consists of a rotating central cone which crushes the gravel against the heavy body of the machine.

(c) **Impact breakers**—Four impact breakers or hammer mills complete the plant. Crushing is effected by the rotation of a number of short hammers or arms which crush the gravel against the body of the machine, reducing 1½-in. material to 1¾-in.

**Bucket Elevators** Two pairs of bucket elevators have been installed to raise material where space precludes the use of inclined belt conveyors. One pair serves the sand treatment plant and the other handles gravel and sand at the loading terminal of the ropeway.

**Mechanical Feeders** The feeding of gravel and sand from the stockpiles is effected by 37 electro-magnetic vibratory feeders suspended from the roofs of the tunnels beneath the stockpiles. Hoppers lead the material to the feeders which consist of a chute vibrated to maintain a continuous flow at a rate controlled by the frequency of vibration.

**Chain Feeders** Two Ross chain feeders operate at the primary feed hoppers and another at No. 1 screen installation to feed gravel to the primary crusher. Heavy chains mounted on a drum rest on the material at the discharge opening and by their weight hold it back. As the drum is rotated, the moving chains feed the gravel to the conveyor or crusher at a rate varied to meet requirements.

## WATER SUPPLY SYSTEM

Processing calls for a very large quantity of water for the hydraulic conveyance of sand and its treatment at the sand plant, for the scrubbing of gravel, and for screen sprays.

For these purposes 5,600 g.p.m. of water are pumped from the river into storage tanks, reticulated by gravity mains and pumps throughout the plant and finally returned to the river. Processing for two shifts per day involves a quantity of water sufficient to supply daily 70 gallons of water per person to a township of 75,000 people.

A number of electrically driven pumps are included in the plant. The largest of these (three 95-hp. centrifugal pumps) by which water is drawn from the river, are mounted on rails on a ramp constructed on the bank of the river about half a mile from the plant. This arrangement enables them to be raised above the level of any flood.

Six corrugated steel tanks provide a total storage capacity of 150,000 gallons, sufficient to run the plant at full capacity for about half an hour, should the main pumps fail.

The raw material conveyor. In the background 'dozing and tipping to the primary feed hoppers is being done.

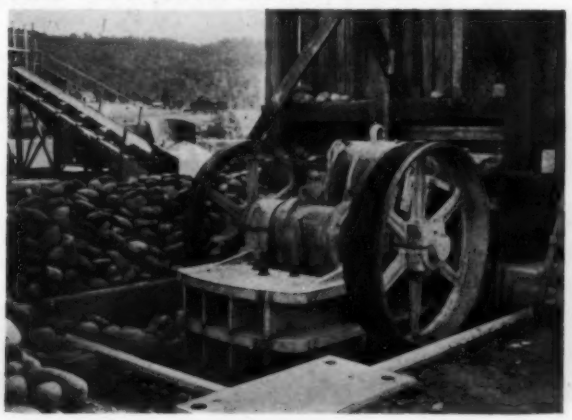
## DESCRIPTION OF PROCESSING

**Section A—Round and Crushed Gravel and Raw Sand** As mentioned earlier, the raw gravel and sand is dumped by rock buggies into the primary feed hoppers. It is now fed by Ross feeder to conveyor No. 1 and raised to the top of No. 1 screen installation, where a single-deck vibrating screen separates it into + 6-in. and — 6-in. material. The former, consisting of boulders up to 24-in., passes into a surge bin and thence to the crushed gravel section, described later.

All 6-in. material (now referred to as round gravel) passes through the screen to No. 2 conveyor and is carried to the top of No. 2 screen installation, consisting of three double-deck screens which separate it into 6-in. and 3-in. sizes. The fomer passes to No. 30 conveyor, thence to No. 2 radial stacker, which conveys it to stockpile B. The latter similarly passes to No. 31 conveyor, No. 3 radial stacker and stockpile C. The remaining smaller material passes through the lower deck to No. 3 conveyor and is raised to No. 3 screens.

At this point wet screening is introduced to overcome the tendency of the smaller gravel to clog the screens. Once again three sizes are separated, 1½-in. gravel being deposited on stockpile D by means of No. 32 conveyor and No. 4 radial stacker, and stockpile E receiving ¾-in. gravel from No. 33 conveyor

The No. 3 screens, showing rejection of ¾- to 1½-in. round gravel. Passing to the radial stackers for stockpiling (left background) is ⅜- to ¾-in. gravel.



The 36- by 24-in. primary jaw crusher which reduces boulders over 6 in. in size.

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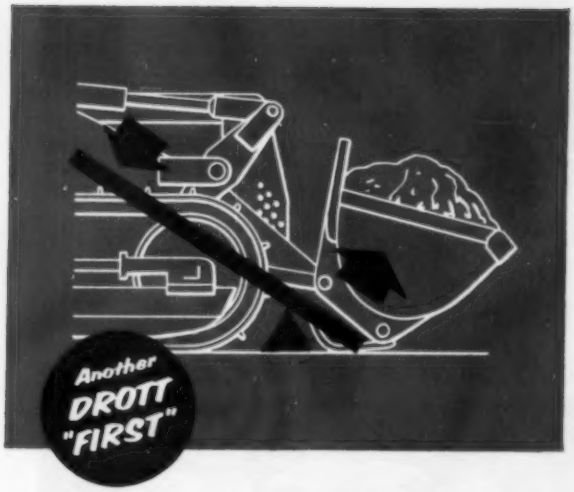


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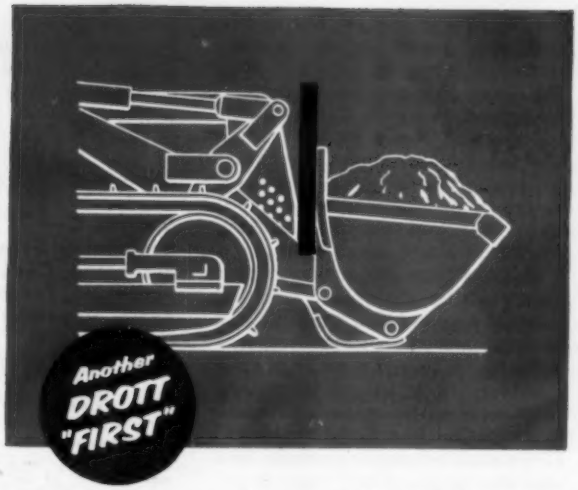


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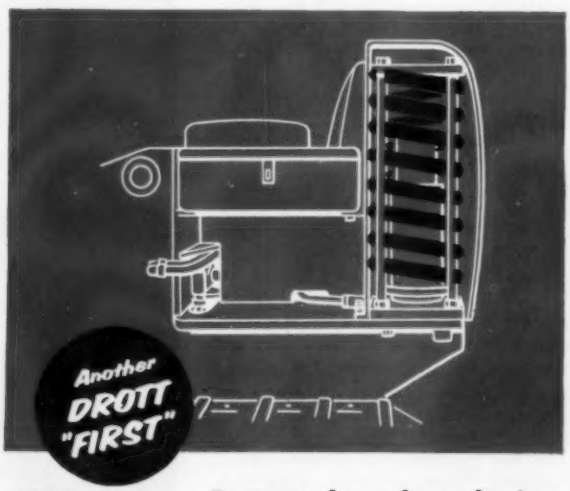


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and No. 5 radial stacker. The residue (—⅜-in.) passes to a concrete sump at the rate of 150 t.p.h. with 280 g.p.m. of water added through the screen sprays. A further quantity of water from a gravity main is now fed into the sump, to provide the total of 2,000 g.p.m. necessary for the hydraulic conveyance of 150 t.p.h. of gravel through an 8-in. pipeline to No. 4 installation.

This is one of the most complex features of the whole plant. Here the material and water are fed into an elevated tank and passed to screens of No. 4 (3/16-in.) mesh. Stockpile F receives the ⅜-in. gravel retained by the screens by means of No. 34 conveyor and No. 6 radial stacker. The remaining material flows into sand dewaterers, where most of the water and unwanted fines (up to 60 t.p.h.) overflows to another underground sump and thence to waste. The "good" dewatered sand is lifted by buckets to No. 4 conveyor and carried to stockpile G.

This terminates the flow of material through the round gravel subsection, resulting in the stockpiling of five different sizes of gravel (6-, 3-, 1½-, ¾-, and ⅜-in.) and one of raw sand.

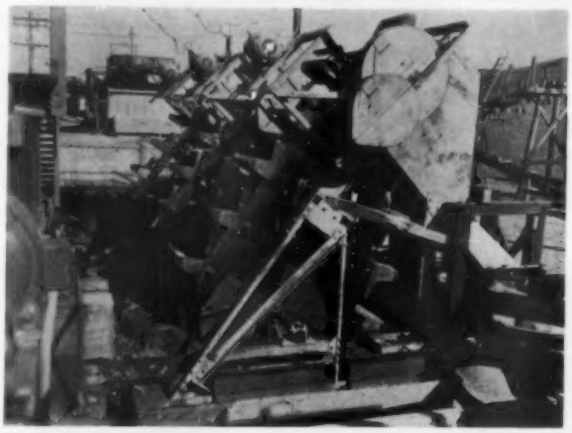
Returning now to the crushed gravel sub-section, the + 6-in. material from No. 1 screen installation is fed into the primary (jaw) crusher and then passed by No. 28 conveyor to No. 6 screens. The 6-in. gravel retained on the top deck passes by No. 29 conveyor and No. 1 radial stacker to stockpile A, while the 3-in. gravel from the lower deck goes direct to the secondary (gyratory) crusher. The product of this machine, as well as the residue from the primary process passes by No. 27 and No. 16 conveyors to the impact breakers. The material from this process is carried to stockpiles H, J, and K by No. 18 and Nos. 19 and 20 conveyors, respectively.

In all, eight stockpiles of gravel and two of sand are produced by this and the round gravel sub-section.

**Section B—Reclaiming Raw and Crushed Sand** In the tunnel beneath stockpiles G and K feeders deliver sand to No. 11 conveyor, which carries the material to the sand treatment plant, where it is raised by bucket elevator to chutes leading to single-deck vibrating screens equipped with No. 8 mesh cloth. The coarser sand is retained on the screens and passed to classifier A. Water sprays assist screening, the finer sands passing through the screens being fed by chutes to the four sizers. Each sizer grades sand into eight different fractions, which are then collected in four launders, one beneath each sizer. Finally, the sand is grouped in three sizes, each of which is collected in classifiers A, B, and C, respectively, and discharged to stockpiles M, L, and N.

**Section C—Reclaiming Gravel, Scrubbing, Check Screening, Feeding Aerial Ropeway** Before being fed to the aerial ropeway for transport to Warragamba, gravel is reclaimed from the various stockpiles for final cleaning and check screening. Vibratory feeders deliver the particular gravel required to conveyors in the tunnel beneath the stockpiles. These conveyors carry the gravel to the scrubbers, which wash it and at the same time remove in the washing water any undesirable matter.

The clean gravel is then discharged by conveyor to No. 7 and No. 8 screens for check screening, following which that passed as correct is fed by No. 8 conveyor to the bottom of No. 5 and No. 6 bucket elevators and thence to either of two



Right: Three dewaterers at No. 4 screens remove water from the raw sand and get rid of unwanted fines before sizing and stockpiling.

Below: A general view of the plant from the No. 3 radial stacker.

One of the six 100-ft. radial stackers which stockpiles the aggregate.

50-ton ropeway loading bins. Undersize material is carried by No. 23 conveyor to reject bins either for reprocessing or disposal to waste.

**Section D—Reclaiming and Feeding Sand to Aerial Ropeway**

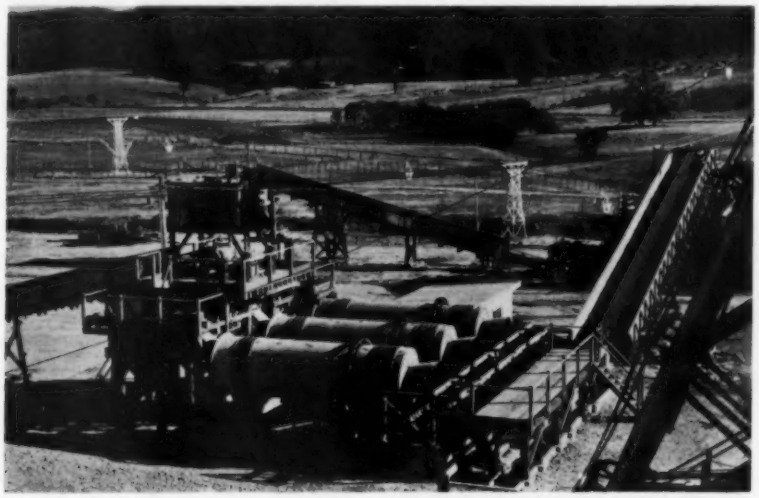
Sand from the three stockpiles L, M, and N is fed simultaneously to No. 15 conveyor in the tunnel beneath the stockpiles at a rate controlled to give a blended sand of appropriate grading. The blended sand is carried to the ropeway loading bins by No. 5 and No. 6 bucket elevators.

Any description of the processing plant would be incomplete without some reference to the intricate system by which it is controlled. Approximately 150 electric-motor-driven units are used, nearly 100 of which may be operating at one time.

As the plant is grouped in four sections, all able to operate independently, the placing of starting switches was very conveniently arranged by grouping in one box in the center of Section A all controls relating to that section, by controlling Section B from the sand treatment plant building, and Sections C and D from a box close to the ropeway loading terminal. All equipment is capable of being started and stopped at the machine itself, but for normal operation, a parallel starting circuit is taken to a control panel in the respective section control box.

Switches for the various parts of the plant are arranged in series, so that the starting of the farthest downstream machine is necessary before the part next upstream can be put in motion and so on (upstream is the end at which material is fed into the section). By this arrangement, no item of the plant can be started up until the downstream section is running. Thus, the failure of any part will stop all parts upstream, preventing a pile-up of material; at the same time all downstream machinery continues to operate until cleared, when it can be stopped as desired.

To avoid the settling of sand in sumps, pipes, etc., the control system permits certain machinery such as pumps, sizers, etc., to continue operating for a limited time, after which they automatically stop.



The scrubber installation, with the reject bins in the background. In the far background is the aerial ropeway which transports the processed aggregate to the Warragamba Dam site.

The ropeway loading terminal, with ropeway towers extending into the far distance.

## President of Canada Cement Sees Steady Cement Demand

President J. M. Breen of the Canada Cement Company foresees production of cement exceeding consumption by a wide margin by the end of this year.

Mr. Breen said that investment in new plants and equipment during 1956 will amount to $21,750,000, bringing total expenditures since the end of World War II to $86,000,000. This will mean an increase in productive capacity of Canada Cement plants from 10,000,000 bbl. in 1945 to 24,000,000 bbl. by the end of 1956.

Expansion has been accomplished at a relatively low average cost per unit of output. This was made possible by enlarging existing plants.

New directors elected were G. A. Grant, vice-president and general sales manager, and V. C. Moynes, former sales manager in Ontario.

## Marblehead's Thornton Plant Gets New Lab and Office Bldg.

A new chemical laboratory and office building have been erected at Thornton, Ill., for the Marblehead Lime Company of Chicago.

The new laboratory contains the latest equipment for analyzing and testing the company's lime products, which include dead burned dolomite, dolomitic lime, and high-calcium lime. To insure constant temperature and humidity during testing, the laboratory has been completely air conditioned.

Marblehead's Thornton plant obtains its limestone from the adjacent Thornton quarry of Material Service Corporation, its parent company. The Thornton quarry is one of the nation's largest deposits of consistent low-silica dolomitic limestone.

The Marblehead Lime Company, established in 1885, is one of the oldest lime producers in the country. This firm also has plants at South Chicago and Quincy, Ill., and at Hannibal, Mo.

# LAW OF SALES OF NONMETALLIC MATERIALS BY CONTRACT AND SAMPLES

By LEO T. PARKER

SELLERS of nonmetallic materials often have serious legal problems involving contracts for the sale of materials by samples or positive representation of the quality of such this article were selected for the interesting and informative higher court decisions on legal questions such as producers of sand, gravel, crushed stone, and cement may encounter. We shall illustrate how some suits might have been won if the sellers had acquired proper legal knowledge and information.

**General Law** First, the law is well settled that under ordinary circumstances a seller is bound to deliver merchandise or materials to a buyer equal in quality to the samples shown when the sale or contract specifications were made. When the suit involves the sale of materials by samples, this question often arises: Did the buyer have ample opportunity to inspect the materials when the sale was made by the samples?

Also, in many instances, a purchaser may unwisely attempt to avoid accepting or paying for materials on the contention that the verbal promises made by a salesman or a broker were at variance with the terms of the written contract, or with the quality of the displayed samples.

In general, if materials are sold f.o.b. the *seller's* location, the important consideration of the Court is: Did the materials conform with the samples when the shipment was delivered by the seller to the carrier? On the other hand, if the selling price is f.o.b. the *buyer's* location, then the testimony showing the condition of the materials when they reached the destination is of greatest importance. This is so because the seller is liable for the changed condition of the material during its transportation only when the sale is made f.o.b. the purchaser's location.

**Proof Of Breach** On the other hand, if the sale is made by contract, and the purchaser files suit against the seller for damages, claiming that the seller breached his contract, the purchaser cannot win the suit unless he proves definitely that his sustained damages resulted from the seller's breach. This rule of law is particularly applicable to contractors who sue sellers of materials claiming that the poor quality of delivered materials resulted in defective construction work.

Last month, for instance, a higher court held that a contractor who sues a seller of ready-mixed concrete for breach of contract, must prove positively that the seller's breach resulted in poor construction work, otherwise the contractor can recover no damages.

In *Dover Concrete Company* v. *D. Supply Company,* 124 N. E. (2d) 733, the testimony showed these facts: A contractor purchased from the D. Supply Company a quantity of concrete for a driveway job at 19881 Westway Avenue, Rocky River, Ohio. The contractor sued the seller for damages, claiming that he had given an order for a mix known in the business as 1-2-4, and that the seller delivered a mix known as a lean 1-3-5. The 1-3-5 mix was used in the installation of the driveway and, because it was not suitable for this kind of construction, "the driveway crumbled and was defective." The contractor had constructed a driveway that was not in accordance with the plans and specifications in the agreement with the property owner. The contractor further alleged that as a result of the seller's breach of contract and agreement to deliver the 1-2-4 mix, he was required to remove a portion of the driveway and replace it.

The jury rendered a verdict holding the seller liable to the contractor for $391 damages. The higher court approved the verdict, saying:

"The jury found a breach of contract and determined the damages, *i.e.*, the reasonable cost of the replacement by the plaintiff (contractor) in the amount of $391. We find no error."

In other words, this court held the seller of the concrete liable in damages to the contractor, because the testimony proved positively that the seller had agfreed to deliver a 1-2-4 mix of concrete when, in fact, it had delivered a 1-3-5 mix.

In another suit filed by the same contractor against the D. Supply Company, the contractor alleged these facts: The contractor bought from the D. Supply Company concrete for installation on another driveway located on property at 28422 West Oakland Street and that the seller sold and delivered to him a "lean" concrete mix, when a 1-2-4 mix was ordered. This driveway crumbled and was defective due to the weak mix, and the contractor removed and replaced the driveway. The contractor asked for a verdict of $818 damages against the seller, D. Supply Company.

The jury rendered a verdict in favor of the contractor but the higher court reversed the jury's verdict, and said:

"There is no evidence to justify a conclusion that the mix delivered was not in compliance with the specifications. The evidence of the plaintiff (contractor) was only that it was a poor mix and the driveway later became defective. This evidence does not prove that the material delivered was not in compliance with the contract, nor that damage occurred as the result of a violation of its terms. There is nothing in the record to prove that the mix delivered on this job did not comply with the specifications. From the evidence, the unfortunate result could be attributed to any one or more of many causes."

In other words, the higher court held that a mere assertion by the contractor that the seller delivered a "weak" or "lean" mix of concrete was not sufficient to prove definitely that the crumbling of the concrete driveway resulted from the seller's breach.

**Inspection By Buyer** The legal rule is well established that if a buyer has no opportunity to inspect materials which he ordered from samples, he never is bound to accept and pay for the shipment if the quality of the delivered materials fails to equal the quality of the samples.

On the other hand, the higher courts hold that if the buyer who ordered from samples and had ample opportunity to inspect the materials but failed to do so, he is not entitled to damages, unless it is shown to the satisfaction of the court that the seller fraudulently induced the purchaser to enter into the contract by intentionally displaying samples of finer or better quality than the grade of the delivered materials. However, according to a leading case, a buyer is not expected to travel great distances to inspect the materials before shipment is made. The leading high-

er court case involving this point of the law is *John Barkley & Company* v. *Burguires Company,* 115 So. 915.

In this case a seller displayed samples to a prospective buyer. The purchaser was 100 miles distant from the seller's plant and did not inspect the bulk. He ordered a large quantity of the material. Later the buyer discovered that the delivered materials did not equal the quality of the samples and he refused to pay the bill. The seller filed suit, contending that the purchaser was negligent in failing to inspect the bulk. However, the court held the seller liable, saying:

"In view of the warranty implied in sales by samples, and of the fact that sales are generally made by sample because of the difficulty or impracticability of inspecting the bulk, and frequently where the bulk is at a distance from the purchaser, we think such sales contemplate that the purchaser shall have the right to inspect the article after delivery, and to reject it or demand a diminution of the price, if the bulk of the article does not agree with the sample, though he must act with reasonable promptness."

In this case the court held that the buyer's failure to inspect the material when it was loaded on the cars was justifiable because it was loaded 100 miles from the buyer.

Also, it is important to know that in all cases where the seller attempts to avoid liability because the buyer failed to inspect the materials, the buyer is entitled to a verdict if he can prove that the seller practiced fraud by the act of displaying good samples with the intention of shipping or delivering an inferior product. This is true irrespective of whether the materials are located conveniently for inspection by the purchaser. However, since it is very difficult for a purchaser to prove that a seller deliberately practiced fraud, a prospective buyer should always inspect the bulk materials instead of displayed samples.

The same rule of law is applicable if the buyer relies on a verbal or written description of the quality of materials. If the buyer neglects to inspect the materials which are convenient for his inspection and later complains that the quality is inferior, he cannot obtain protection of a court and a favorable verdict unless he proves that the seller defrauded him.

**Seller's Liability** Modern higher courts consistently hold that a seller who fails to deliver to a contractor materials in conformity to the samples displayed when the sale was made may be liable for all damages sustained by the contractor as a result of the breach.

For illustration, in *Gascoigne v. Cary Company,* 104 N. E. 734, it was disclosed that a building contractor contracted to purchase from samples a quantity of material to be used in the construction of a wall.

Upon delivery of the material the contractor failed to inspect it carefully, since the general appearance did not disclose any variations from the contract specifications and samples. However, when the wall was completed, the owner discovered that the color of the exterior was not of uniform shade or appearance, and not the same as the samples displayed when the sale was made.

In the ensuing litigation the contractor contended that he was entitled to recover damages from the seller for the various items of expenses he incurred, including the cost of replacing the wall.

The court held the seller liable to the contractor for the defective quality of the material and also liable for the necessary expenses of rebuilding the wall. This court explained the law on the subject, in the following language:

"The defendant (seller) impliedly warranted that the bulk should correspond with the sample. . . . The evidence was clear that the shipments did not conform to the sample in quality. . . . A conclusion that no negligence had been shown, in connection with the uncontradicted evidence and that notice was promptly given to the defendant (seller) would warrant the assessment of damages for not only the difference between what the plaintiff (contractor) bought and what he received, but also the expense of taking down and rebuilding the wall."

**Rejecting Portion of Shipment** Another important point of the law is that if the seller makes a shipment of materials, any portion of which does not equal the samples submitted when the contract was made, the purchaser is entitled to accept and pay for the portion of the shipment that equals the sample and to reject the balance.

For example, in *Wilson & Company v. Everett Company,* 184 F. 945, it was disclosed that a buyer and seller by correspondence entered into a contract of sale for several hundred tons of material. During the correspondence the seller sent the buyer a sample.

The purchaser did not inspect the shipment until several days after its arrival, when he discovered that a portion of it proved to be inferior to the sample. He accepted and used the good material but refused to pay for the remainder.

The seller instituted legal proceedings to recover the full amount of the contract price, contending that notwithstanding the inferior quality of a portion of the shipment, the purchaser technically accepted delivery of the entire shipment when he accepted and used a portion of it. In other words, the seller based his suit upon the contention that the purchaser was legally bound to accept and pay the contract price for all of the material regardless of the quality, because he had accepted and used a portion of the shipment.

However, the court refused to agree with this contention. In holding that the purchaser was not required to pay for the unsatisfactory portion of the shipment, the court said:

"The idea is contrary to the rule of law applicable to the case, because it ignores the implied warranty upon which the defendant (purchaser) had a right to rely. The defendant (purchaser) acted within his legal rights in resisting the plaintiff's (seller's) demand for the price of the portion inferior to the sample. The rule is well established, by numerous decisions of the courts, that a breach of an implied warranty of quality entitled the vendee (purchaser) to retain the goods and, when sued for the purchase price, to set up the breach of warranty to reduce the sum recoverable by the vendor (seller). . . The measure of damages which the buyer may claim for breach of an implied warranty of quality is the difference between the actual value of the property delivered and the higher value of the warranted quality; and if there is no other evidence of the value, the price agreed to be paid will be regarded as the value of the property of the quality warranted."

On the other hand, the courts very consistently hold that a buyer is bound to notify the seller promptly if he discovers that the materials do not equal an implied warranty or the samples displayed when the contract of sale was completed.

For example, the leading case of *Brown v. Scheur,* 128 Pac. 83, it was disclosed that a building contractor entered into a contract to purchase a quantity of material which was to be equal to the sample displayed by the seller. Three shipments were received and accepted by the contractor without complaint. However, the

government, for whom the building was being erected, discovered the material to be "off color" when compared with the samples and refused to permit the contractor to use it. Notwithstanding these proven important facts, the seller was not informed of this complaint and continued to ship the off-color materials, some of which the contractor used.

Later the contractor refused to accept the shipments and also refused to pay for the material previously shipped. The seller instituted legal proceedings to recover the full purchase price, contending that he was not liable for any warranty, because the contractor had failed to inform him promptly that the material was not satisfactory. It is important to know that the higher court held the seller entitled to recover from the contractor the full amount of the contract price and stated the law as follows:

"It is too fundamental to require discussion here that a purchaser of personal property who receives and accepts the property, knowing at the time its condition tnd fitness or unfitness for the purpose for which he is purchasing, cannot accept the same and appropriate it to his use and continue to demand, receive, and accept more and more goods of the same character and quality, and then, after he has used it, raise objection for the first time that it was not up to the standard or like the samples of the goods he contracted for in the first instance. He must be fair and open about his dealings. If the goods furnished are not up to the standard of the sample, he must use reasonable diligence in apprising the vendor (seller) of his objection, and refuse to accept further goods of the kind."

Quite obviously, this law is applicable to sales made by samples, sales by correspondence, and sales by ordinary contract.

**Salesman's Authority** An ordinary salesman, traveling or otherwise, has no natural authority to make valid and enforceable contracts of sale for his employer. A contract taken or signed by a salesman most be approved by his employer before it becomes enforceable by either the buyer or seller.

Moreover, the legal rights of a buyer and seller are not affected by the failure of a broker or salesman to communicate the buyer's instructions to the seller. This is true because legally a broker or salesman is deemed a "go-between" in the transactions of a buyer and a seller. For this reason the seller is not usually liable for promises made by a representative, unless it is proved to the satisfaction of the court that the seller performed some act by which the purchaser had reason to believe that the representative had proper and legal authority to make valid contracts for his employer.

Therefore, a buyer cannot avoid liability on a contract of sale by proving that a salesman promised that the shipped merchandise would be superior to the quality of grade of the samples displayed when the sale was made.

For instance, in the case of *Adkins-Polk Company v. John Berkley & Company*, 297 S. W. 757, it was shown that a salesman displayed samples to a prospective purchaser. The buyer was not exactly satisfied with the quality of the samples and stated to the salesman that he would place an order if the quality of the delivered materials would be slightly better than the samples. The buyer placed the order, but the salesman neglected to inform his employer that the purchaser desired material of a better quality than that represented by the samples displayed.

The purchaser refused to accept the shipment, contending that the goods when delivered did not equal the quality he expected. However, the evidence proved that the material when delivered to the cars equalled the sample displayed by the salesman. In view of this testimony, the court promptly held the buyer liable, explaining this important law:

"The sale was by sample. . . . We understand the rule to be that when a sale is made by sample, the sample becomes the standard of comparison for the eye as to quality and kind, instead of the ear, and memory in description, in determining whether the goods sold comes up to the description of the goods sent. The bulk of the goods, to complete the sale, must correspond with the samples; if not, the buyer may reject when delivery is tendered. A warranty is implied in sales by samples: that the goods shall be of like quality, character of the sample, a condition precedent to a completed sale."

**Modification Of Contract** Generally speaking, an ordinary employee, *e.g.*, a clerk, stenographer, a bookkeeper, etc., is not empowered to bind his employer on a contract. However, if the employee as a manager or superintendent is authorized to transact "general business" for his employer, the court may "imply" that the other contracting party has power to compel the employer to fulfill the exact terms of the contract. The same law is applicable to modification of a contract by an employee. Hence, although a written contract distinctly provides that sand and gravel or other material shall be paid for in accordance with measurements, the purchaser is bound to pay on the basis of weights if, after the contract was signed, an authorized employee of the buyer agreed to make payments on this basis.

For example, in *Steckel v. Cavanagh*, 140 Atl. 401, it was disclosed that a seller of sand and gravel contracted with a purchaser to furnish the necessary amount of material to be used in the construction of a road. The contract contained the following stipulation:

"We (sellers) knowing that our gravel weighs 93 lb. per cu. ft., and our sand weighs 81 lb. per cu. ft., agree to accept payment based on the above weights, measurements of batches to be agreed upon between us. This is to avoid the time lost in weighing each truckload."

Later the buyer's superintendent informed the seller that for convenience the latter could bill the material by actual weight. In accordance with this agreement, the seller billed the material to the purchaser by actual weight, taken from the scale ticket, which was signed by the drivers of the trucking firm engaged by the purchaser to haul the material.

The purchaser refused to pay for $4,708 worth of material, contending that the superintendent had no authority to change the terms of the written contract. However, the court held the buyer liable, saying:

"The evidence showed that the superintendent had charge of the entire work; that he hired and discharged help, made up payrolls, ordered repairs, and hired apparatus."

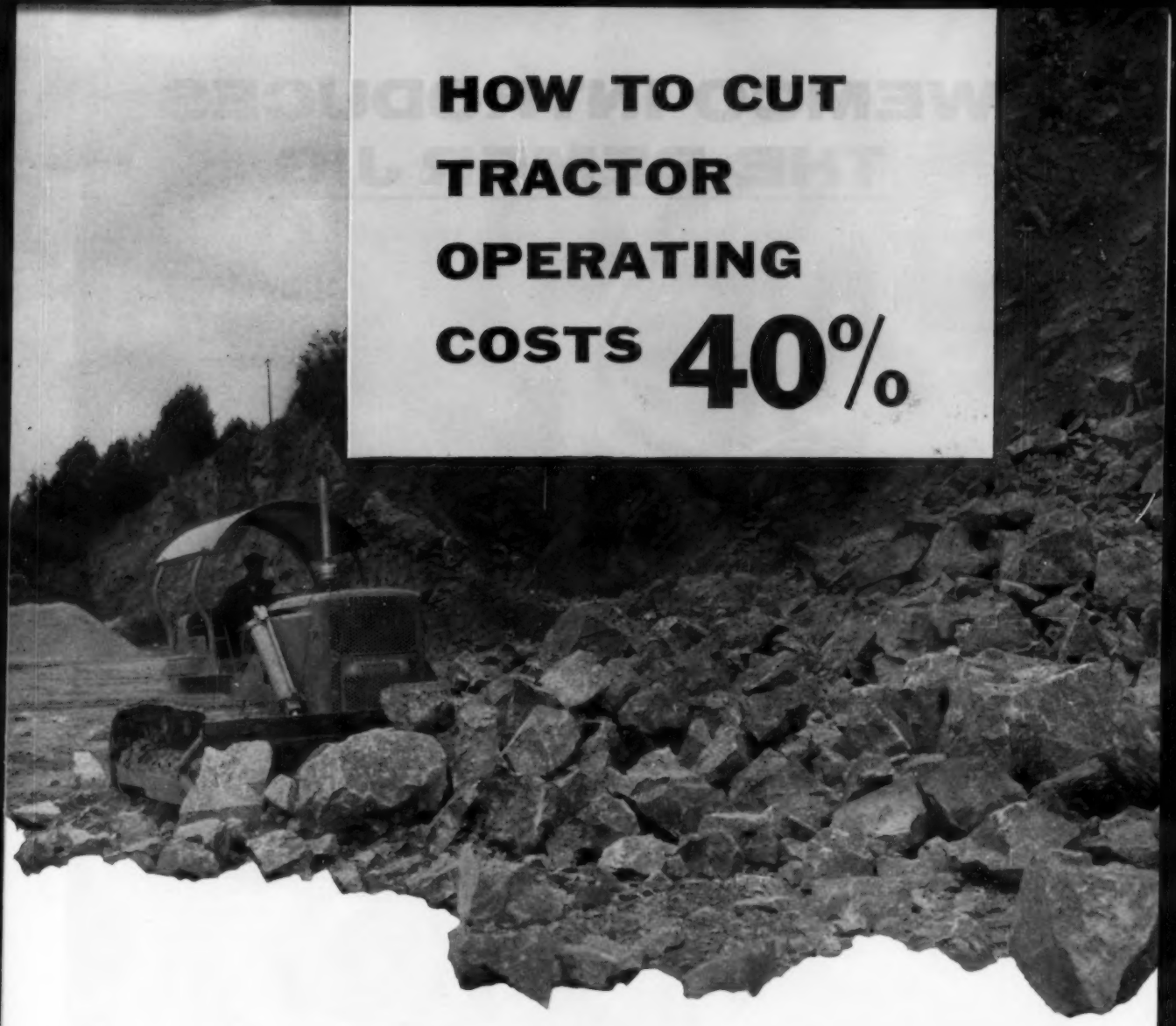
## Labor Developments

(*From page* 73)

ployer bargaining unit for the purpose of negotiating a new contract. It made no attempt to withdraw until after the agreement was negotiated and after actual signing by one of its corporate officials. We regard the attempted withdrawal at this late stage as having been made at an inappropriate time and as ineffective."

Clearly, the moral to be drawn is that an employer will not be allowed "to have his cake and eat it too"; he will not be allowed to be a party to the bargaining and then to withdraw if the results do not suit him.

# HOW TO CUT TRACTOR OPERATING COSTS 40%



THIS new Caterpillar D7 Tractor (Series C) replaces another D7, veteran of 14 years of tractor-busting work in the quarry of Olympic Portland Cement Co. at Limestone, Wash. The old D7 it replaces cost a total of $29,669.31 for all running expenses, upkeep and repair during 14 years on the job. This is three times its original cost. According to Joe Ristine, Quarry Superintendent, the usual figure in this rough work is five times original cost. A clear saving in this case of 40%!

With its No. 7A Bulldozer, Olympic's new D7 clears shot rock from the quarry floor, cleans up around the shovel, and maintains haul roads. Rugged work—but this new CAT* Diesel Tractor is designed to handle even *more* jobs at even *lower* cost than its sturdy predecessor. Its heavy-duty diesel engine develops 128 HP for bigger, more profitable loads. The injection system delivers full, foul-free power on money-saving No. 2 furnace oil.

This new tractor is available with an oil clutch for longer life and greatly increased periods between clutch adjustments. Track shoes are now hardened by a new "water quench" process to stand up under severe quarrying conditions. Hydraulically boosted steering and new starting engine with easy single-lever control are popular with operators.

The new D7 is available with straight or angle blade, with hydraulic or cable control. Your Caterpillar Dealer will be glad to arrange an on-the-job demonstration of the D7 or other Caterpillar Diesel Tractor that will work most, last longest and cost least on *your* job. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

**CATERPILLAR***

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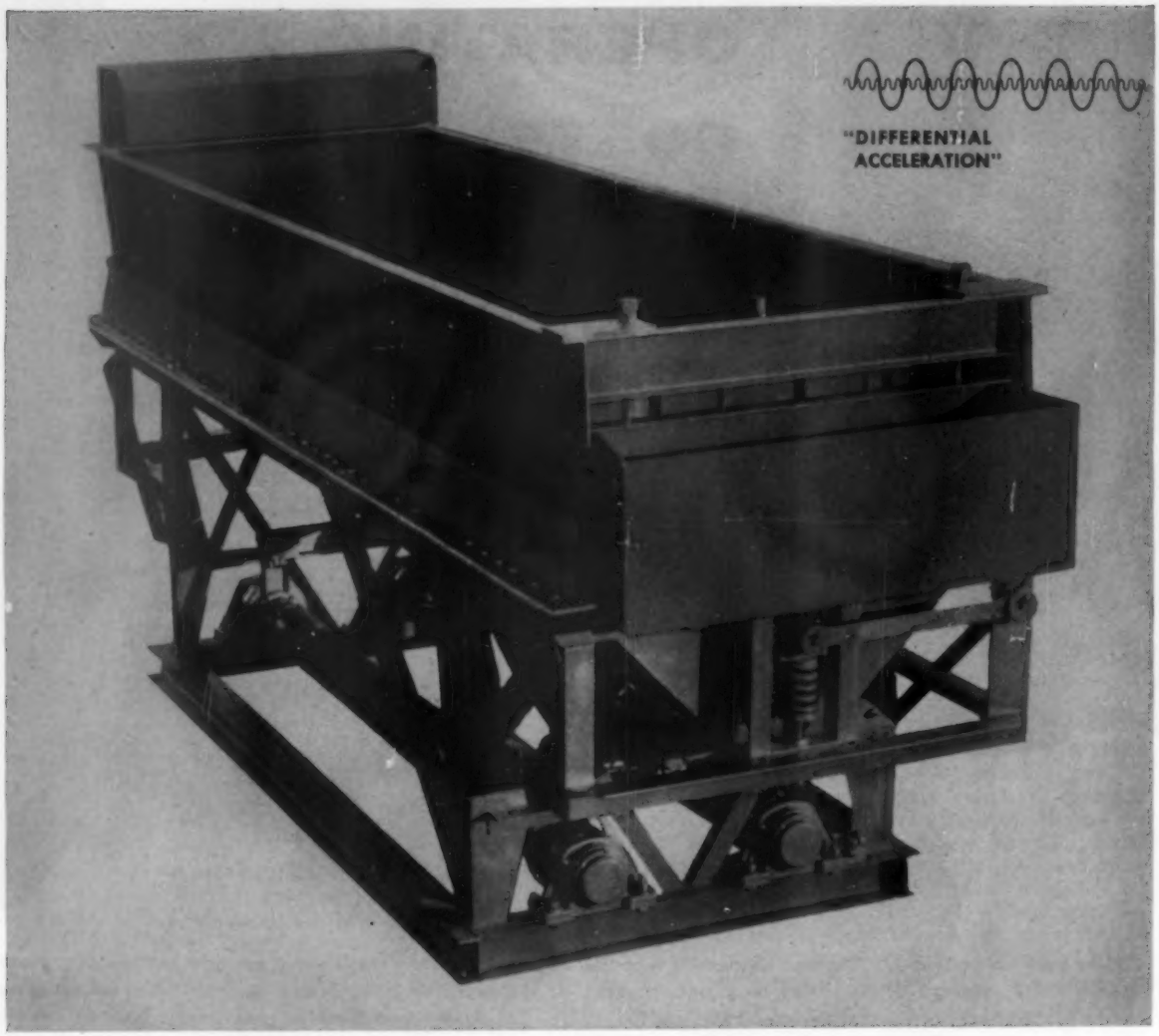
**NAME THE DATE... YOUR DEALER WILL DEMONSTRATE**

# WEMCO INTRODUCES THE REMER JIG




## a new tool for sand and gravel cleaning

At Eagle Sand & Gravel Company, Sioux Falls, South Dakota

**60 TPH Jig feed contains 6.0 to 10.0% shale.**
**After Jigging, sand contains only 0.3 to 0.5% shale.***
*(Further elimination can be made with the Remer Jig, but is not required in this specification.)

This gravel deposit also contains iron oxide with a yellow ochre center. The Wemco Remer Jig eliminates 70 to 80% of even this material.

Owner, Robert F. Bruns says, *"We are more than pleased with this phenomenal new machine and at last are able to meet the tighter material specifications."*

**Differential Acceleration** utilized on the Wemco Remer Jig combined with the long, wide bed, results in a fast moving, completely live jig bed over this large area. This long jig bed provides adequate hutching capacity that saves your fine sand yet eliminates undesirable materials. A typical 5′ x 16′ jig will clean 40 to 60 tons per hour. (Even larger tonnages have been reported.)

**If your sand is contaminated** by any material of lighter specific gravity, you need the facts on the Wemco Remer Jig. Write today for literature. (Other Wemco products for Sand and Gravel Treatment include Sand Preparation Machines, Sand Pumps and Wemco HMS Mobil-Mills.)

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WESTERN MACHINERY COMPANY

760-K FOLSOM STREET • SAN FRANCISCO 7, CALIF.

Representatives throughout the United States and Canada and in major countries around the world.

The Stevenson quarry near Ballymena in Northern Ireland, prior to deep-hole small-bore blasting. Note the vertical cleavage planes.

# SMALL-BORE DEEP-HOLE DRILLING AT QUARRY IN NORTHERN IRELAND—

## Excellent results obtained on 50-ft. face

Another P&O Exclusive

AN interesting experiment was recently undertaken at the quarry of James Stevenson, Ballymena, County Antrim, Northern Ireland. This project took the form of a development on the Atlas Copco (Great Britain) Limited's method of small-bore deep-hole quarrying. The object of the experiment was to reduce the shock waves created by the explosion, also to reduce the amount of spread and at the same time to provide a large quantity of well fragmented rock. The section of the quarry face on which this experiment was conducted is shown in the first photograph. The type of rock is basalt. It will be noticed from the photograph that the face is disrupted by vertical cleavage planes.

In order to obtain a large volume of rock from a relatively short length of face it was decided to drill two rows of holes and fire them simultaneously, using millisecond-delay detonators.

The drilling was performed by using Atlas Copco rock drills, type RH657 and RH658, together with the standard extension drilling equipment and integral steels. (See accompanying illustration.) The primary drilling was undertaken with the RH658 rock drill in conjunction with Integral Coromant drill steels. These holes were then extended to the full height of the quarry face, that is, 54 ft., using the RH657 with its special separate air or water flushing attachment and the extensible drill steels.

The actual drilling on the quarry face was undertaken by Mr. Stevenson's employees, assisted by an Atlas Copco drill master. The spacing of the holes was 6 ft., and two rows of holes were drilled having a burden of 6 ft. for each row. A total of 50 holes were drilled, 25 in each row, giving a total footage of 2,700 ft. In this particular instance no toe holes were drilled, due to the fact that there was a band of highly eroded rock at the bottom of the quarry. The average drilling speed over the whole footage was 25 f.p.h. Because it was impossible to put in the toe holes, the bottom of each hole was charged with a 2-lb. charge of dynamite, and the remainder of the hole was charged with 1½-in. Polar Ammon Gelignite to a depth of 6 to 8 ft. from the top of the hole. The top 6 to 8 ft. was stemmed in the normal way. The time delays were so arranged that each group of shots was fired to two free faces.

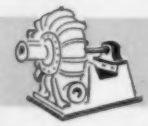
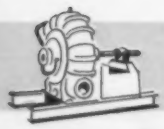
Here a workman is about to begin operating deep-hole, small-bore drilling equipment.

There was no extensive flying. The 50 holes were fired with five delays, the center holes on the front row being instant and the remainder as previously stated. The total weight of explosive used, 1,150 lb., brought down 10,200 tons of well fragmented rock.

The fragmentation can be clearly seen in the third illustration, which shows the rock lying against the quarry face. There was no necessity for extensive cleaning up prior to the loading operations, and the amount of secondary blasting necessary was negligible. The net result of this experiment was to give approximately 9 tons of extremely well fragmented rock for each pound of explosive used. A total of 10,200 tons of rock was obtained from one shot for 2,700 ft. of drilling. Drilling time took one man approximately 108 hours (with occasional help), using one machine. While the results of one experiment are not conclusive, these facts are apparent.

(*Continued on page* 116)

## *Another Customer Speaks*

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BRICK - SAND - GRAVEL - CEMENT - LIME
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NASHVILLE 3, TENN.
February 24, 1956

Thomas Foundries, Inc.
Birmingham 1, Alabama

Gentlemen:

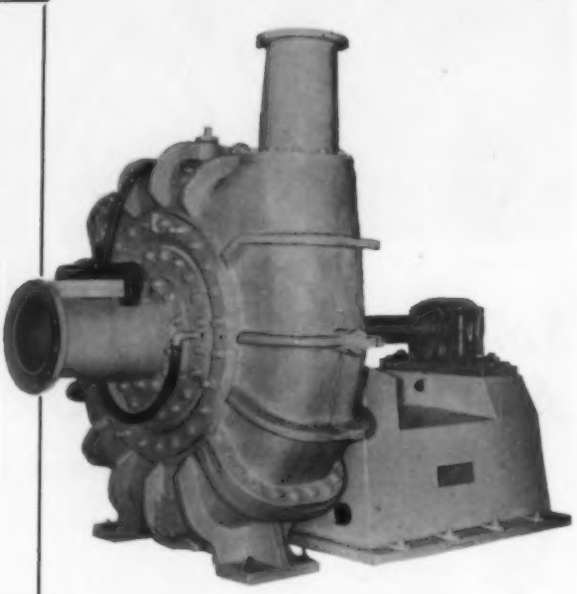
In October, 1952, we purchased a Series "LL" Thomas Pump for our "Dredge Herbert". This was after your representative made an inspection of our dredge to the end of assisting us in improving our production and also eliminating the trouble that we were having with our pump overloading the 150 horsepower DCmotor.

The Thomas Pump was installed as per your instructions. We are happy to state that we have been gratified with its performance, as it enabled us to eliminate three problems that were affecting our production.

1. Improved production considerably.
2. Reduced the overload on our motor.
3. Eliminated much of the down time that we had with the former pump due to plugging.

In addition to these improvements, we are enjoying 2 to 3 times longer life from the wearing parts of the Thomas Pump than the pump it replaced.

Very truly yours
T. L. HERBERT & SONS
By James F. Hunter
James F. Hunter



# Another Prominent Producer "GRATIFIED" with Thomas DURABLE Dredge Pump

Mr. Hunter says it in terms of INCREASED PRODUCTION, REDUCED MOTOR OVER-LOAD and LESS DOWN-TIME. But he really means what we have been saying for a long time: *"You can't buy at any price a more durable pump than a "Thomas" for sand and gravel—you can't buy one that will make you as much money."*

Write us for detailed information

## THOMAS FOUNDRIES, *Inc.*

**P. O. BOX 1111 . . . . BIRMINGHAM, ALABAMA**

# More Information, Please

**Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.**

**BULLETIN 4179** describes *Ingersoll-Rand Company's* new Drillmaster 6½-in. blast hole drill for quarrying, construction, and mining. The bulletin covers three types of mountings—crawler, truck, and tractor—and fully explains the new "down-the-hole" drill. Two pages are devoted to helpful rock job estimating data. (1)

**100 T.P.H. CAPACITY MODEL 365W** stationary sand and gravel washing and screening plant is now being offered by *Pioneer Engineering Works, Inc.* The new Model 365W can be equipped to turn out up to four sizes plus oversize of washed gravel and one size of washed sand simultaneously. It can be adapted to varying product size requirements frequently only by changing screens. (2)

**BULLETIN NO. 5308-R,** offered by the *Macwhyte Company,* lists the safe loads for slings of twenty sizes wire rope when used at various angles of application. Information covers slings varying from ½ ton safe load to 48.7 tons safe load. All Macwhyte slings are available in the eleven standard types illustrated. (3)

**GRUENDLER'S SINGLE PASS PORTABLE CRUSHING PLANT,** designed for safety and ease of operation, is reported to have among its advantages extreme mobility, simple, rugged construction, low cost maintenance, and maximum production. Adjustments can be made quickly without special tools or equipment due to easy accessibility of all parts. Literature is available from *Gruendler Crusher & Pulverizer Company.* (4)

**ELECTRIC SCREEN HEATERS** manufactured by *F. R. Hannon & Sons* are adaptable to practically all woven screens, and can be applied to new or existing single or multiple deck vibrating or shaker screen installations. Models are available to meet all capacity requirements and for heating either stainless or tempered steel cloth. (5)

**RAIL CAR SWITCHERS** which run on rubber are two new products manufactured by *LeTourneau-Westinghouse Company.* Called the SwitchMobile and the SwitchTractor, these products speed from job to job over any terrain without having to follow rails or roads. (6)

**THE NEW R-15 REAR-DUMP EUCLID** is described in an 8-page catalog just released by the *Euclid Division.* Rated payload of the unit is 15 tons with standard 14.00 tires; 18 tons with optional 16.00 tires. The catalog illustrates the design and operating features. (7)

**DRAGSCRAPER CATALOG A** offers full details and specifications on *Sauerman Bros.* DragScraper machines. Parts I and II cover standard installations from 1/3 to 3 cu. yd. Parts III and IV describe Rapid Shifting DragScrapers in sizes from 1/3 to 5 cu. yd. The last section shows track cable machines and tower excavators. (8)

**NO. 44 CATALOG,** second edition, listing the company's complete line of mining and contractors' tools, is available from *Thor Power Tool Company.* In Addition to complete descriptive matter on each tool and its related models, a specification table is presented together with information on repair kits and other salient facts. (9)

**A NEW 8-PAGE BOOKLET** issued by the *American Gear & Manufacturing Company, subsidiary of Brad Foote Gear Works, Inc.,* describes the seven different models of the company's new Plan-Gear Transmission. The booklet explains the operation of the transmission, lists its advantages, suggests possible uses, and gives complete design data, including dimension drawings. (10)

**"STRAIGHT-END",** a new sewn multiwall paper shipping sack featuring reinforced end construction has been introduced by *Bemis Bro. Bag Company.* The reinforcement consists of strips of kraft paper between plies at the bag's top and bottom, giving the effect of an extra ply at these points. (11)

**DREDGING, STEAM, AND CONCRETE HOSE** are among the products described in a new catalog issued by the *Boston Woven Hose & Rubber Company* presenting its line of mechanical rubber products. The catalog contains photos and cutaway views of each product in addition to information on the types, sizes, and diameters available. (12)

**BULLETIN No. 550,** an engineering bulletin giving data on precision molded products for industrial applications, has been published by *Raybestos-Manhattan, Inc.* A section on engineering design data enables product designers to determine shapes and sizes in which R/M precision molded products can best be produced. (13)

**WIRE ROPE SLING** in 54 standard types is presented in the 80-page "Wireco

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**JUNE, 1956**

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# More Information, Please

**Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.**

Slings" catalog available from the *Wire Rope Corporation of America*. Capacity tables and a line of standard fittings are included. Patented Mazzella Multi-Part slings, made under license, are also described. (14)

**THE REX RAILPORTER,** manufactured by the *Chain Belt Company,* will carry liquid, bulk, package, block, and other construction materials. Consisting of a powered unit with hopper that runs on a single rail, the Railporter is simple to operate, travels at a rate of 300 ft. per minute, and handles as much as 26-cu. ft. of material. (15)

**LIGHTENING MODEL RU** rubber lined pumps for handling abrasive, fine mesh solids are featured in a booklet offered by *The Kansas City Hay Press Company*. Advantages claimed for the pumps include longer life and reduced maintenance. (16)

**ORIENTED DIAMOND BITS,** a 16-page catalog offered by *Sprague & Henwood,* illustrates and describes all types of oriented diamond coring bits, non-coring bits, casing bits, etc. Described in detail is the story of orienting drilling bort in diamond bits, initiated by Sprague & Henwood in co-operation with the U. S. Bureau of Mines. (17)

**GILCO WIRE STONE SAWS** were developed by the *L. M. Gilbert Company* for use in the manufacture of stone. Cutting is accomplished by means of an abrasive mixture which is fed continuously to a rapidly moving steel wire. The wire drags the mixture across the stone to effect the cut. Bulletin No. 200 fully describes the Gilco saw. (18)

**A FULL LINE OF POWER TRANSMISSION EQUIPMENT,** including flexible couplings, variable speed pulleys and transmissions, and universal joints and motor bases, is presented in a 12-page technical brochure just released by the *Lovejoy Flexible Coupling Company*. Information includes operating data, horsepower ratings, sizes, and types for varying uses and working conditions. (19)

**POWER-TURN,** available on *Oliver Corporation's* OC-18 crawler, offers the features of clutch and controlled differential steering. Power-Turn makes it possible to start, stop, vary speed and pull without declutching. (20)

**NU-AERO-PENETRATING OIL** and Spray-Lube heavy-duty lubricating oil, manufactured by the *Pressure Products Company,* come in easy-to-handle spray containers. Nu-Aero will lubricate and loosen, even on hot surfaces, and can be used overhead—it will shoot over 4 ft. Spray-Lube eliminates brushes and paddles, can be used as a rust preventive, and is said to be dripless. (21)

**AIR ACTIVATED CONTAINERS,** developed by *The L.C.L. Corporation,* are manufactured and operated under an exclusive license from the *Kennedy-Van Saun Mfg. & Eng. Corporation*. The containers combine in one unit economical and convenient containers for handling free-flowing bulk materials and a pneumatic transport system for unloading them. (22)

**A 64-PAGE ILLUSTRATED HANDBOOK** on highway and off-the-road tires has been published by the *B. F. Goodrich Tire and Equipment Company*. The handbook includes a tire selection chart and load and inflation tables for tires in many applications, and a special section on tire care. (23)

**FORM 2975,** available from the *Toledo Scale Company,* describes new developments that make possible the remote recording of weights in digital form. Weights now travel to almost any remote location and are fed directly into tabulators, tape punches, typewriters, and other office machines. (24)

**FUNCTIONS OF THE NIAGARA AERO AFTER COOLER** in removing moisture from compressed air and gas are explained in Bulletin No. 130, available from the *Niagara Blower Company*. Diagrams and photographs of the apparatus, and illustrations of its application to air liquefaction systems, are included. (25)

**CHEMICALLY OPERATED CO$_2$ ANALYZERS** and recorders, manufactured by *The Hays Corporation,* are featured in a color catalog containing descriptions of the operation and sampling system, drawings, applications, principle, features, available models, and standard charts of these combustion meters. (26)

**THE 1956-57 TRUCK AND TRIALER SIZE AND WEIGHT RESTRICTIONS** booklet, published by the *Four Wheel Drive Auto Company,* is being offered to truck owners and operators. The booklet is a handy, pocket-size compilation of the road laws of all 48 states and the District of Columbia. (27)

**JUNE, 1956**

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| 81 | | | | | | | | | | | | | | | | | | | |

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Photographed on-the-job Llano, Texas

# Dezendorf Marble Co. Acclaims Accurate Sizing

Pictured above is one section of the modern, efficient Llano plant of the Dezendorf Marble Company located just outside of Austin, Texas.

If vibrating screens play a part in your operation, you'll be interested in what Mr. S. C. Bilbrough, Owner-Manager of Dezendorf Marble Company has to say about the Seco screens on this job.

"We are very pleased with the performance of our two Seco Screens. We make four sizes of chips: #00 dust which is minus 10 mesh, #0 which is ⅛ inch, #1 size from ⅛ to ¼ inch and #2 size from ¼ to ⅜ inch. Our plant has a capacity of 300 tons a day of eight hours. Material is clean at the end of screening. The #1 and #2 sizes are standard sizes for terrazzo chips and must be free of dust. The screens and their location in the plant setup assure us a very clean product.

"I would like to say that I had visited a couple or more crushing plants where Seco Screens and other vibrating screens were used prior to the construction of our plant. I was convinced that Seco Screens appeared to be the best I saw. I have not found any reason to change that original opinion. They have been very satisfactory in every way."

Signed S. C. Bilbrough

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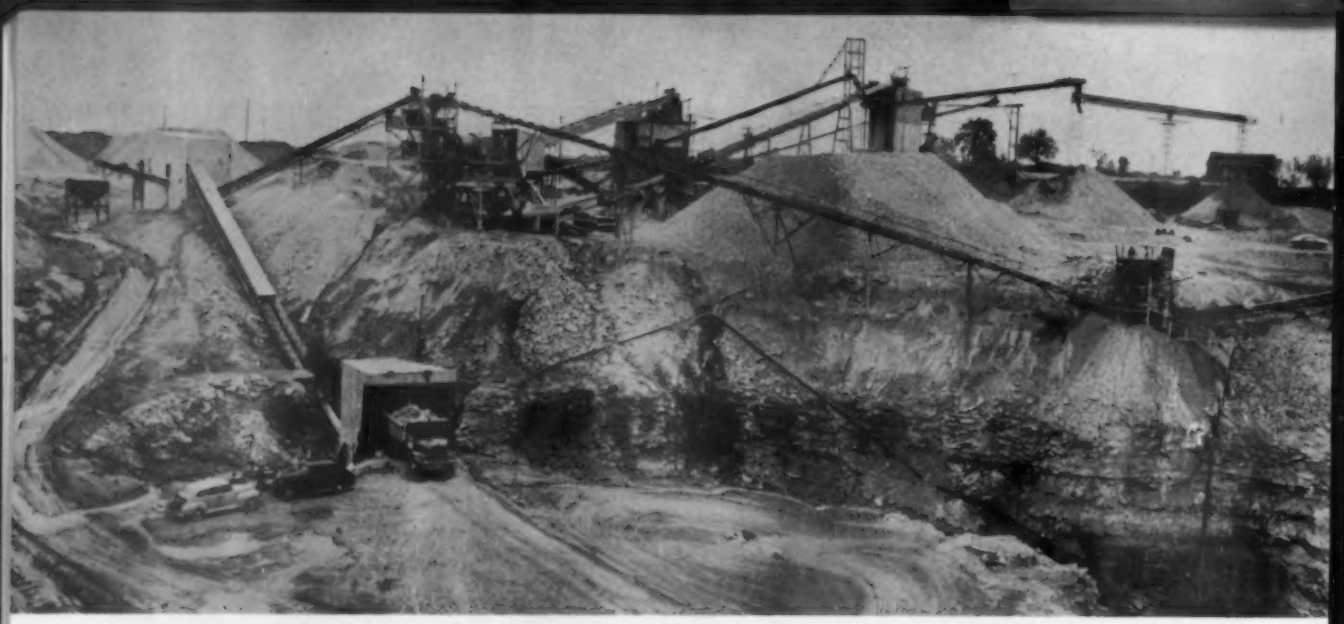
## MAKE 1956 YOUR "LOOK AHEAD" YEAR

Poor equipment increases your production costs . . . robs your profits. Look ahead . . . choose high accuracy, smooth operating SECO Screens now . . . and you'll be set for years of profitable screening. Write, wire or phone

**SCREEN EQUIPMENT CO., INC.**

BUFFALO 25, NEW YORK



The dual crushed stone and sand and gravel plant of the May Sand and Gravel Corporation near Fort Wayne, Ind. The crushed stone level is in the foreground; the reprocessing hopper and conveyor are at the right.

# Indiana Firm Produces Sand and Gravel and Crushed Stone from Same Property

Another ON THE SPOT Report

By WALTER E. TRAUFFER

ONE of the most unusual and interesting aggregate producing operations in this country is that of the May Sand & Gravel Corporation of Fort Wayne, Ind. Near that city this company operates a sand and gravel plant and a crushed stone plant side by side, getting their material from the same pit (or quarry).

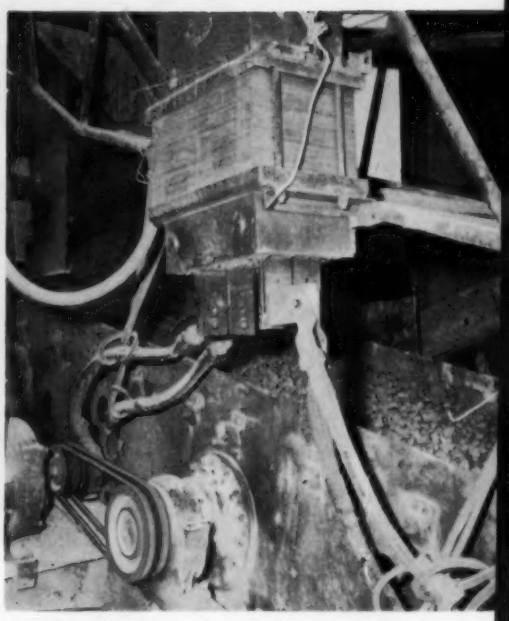
The sand and gravel deposit has been worked since 1935. Under it is a limestone deposit, which was opened up in 1951. During the intervening years there was a constant battle against excessive ground water and other obstacles which would have discouraged most men. But William May, founder and president of this company, persisted, and today he is in the enviable position of having what is probably Fort Wayne's nearest source of good aggregates. This city has heretofore had to fill its needs from much more distant sources. It was only this fact which justified the great effort and expense incurred in developing this deposit.

Mr. May went to work at the age of 13 as a truck driver for his father on road construction work. In 1924, at the age of 19, he owned his own truck and bought gravel from local pits. Then he purchased a crane and went into business for himself, selling pit-run gravel. In his spare time Mr. May engaged in auto racing on dirt tracks in the Middlewest and did quite well over a period of years. All his profits from both sources were put back into the gravel business, and in 1935 he was able to build his first sand and gravel plant. According to Mr. May, his most gruelling race was with the water in this deposit.

The original plant was comparatively small. At first a slackline was used and later a 6-in. dredge pump. It was enlarged soon afterward, with the addition of an 8-in. pump. The present plant, completed in September, 1954, is the fifth at this location. Dredging was discontinued in 1940 in favor of dry excavation, a practice which requires considerable pumping as the ground water level is

This view shows the two levels with shovels loading sand and gravel (above) and limestone (below).

A closeup of a 2½-cu. yd. shovel loading sand and gravel into a truck for the plant.



One of the several crushed stone sizing screens and the electric screen heaters which prevent blinding.

## serious ground water condition only one of many problems solved in developing this unusual operation

only about 15 ft. below the earth's surface.

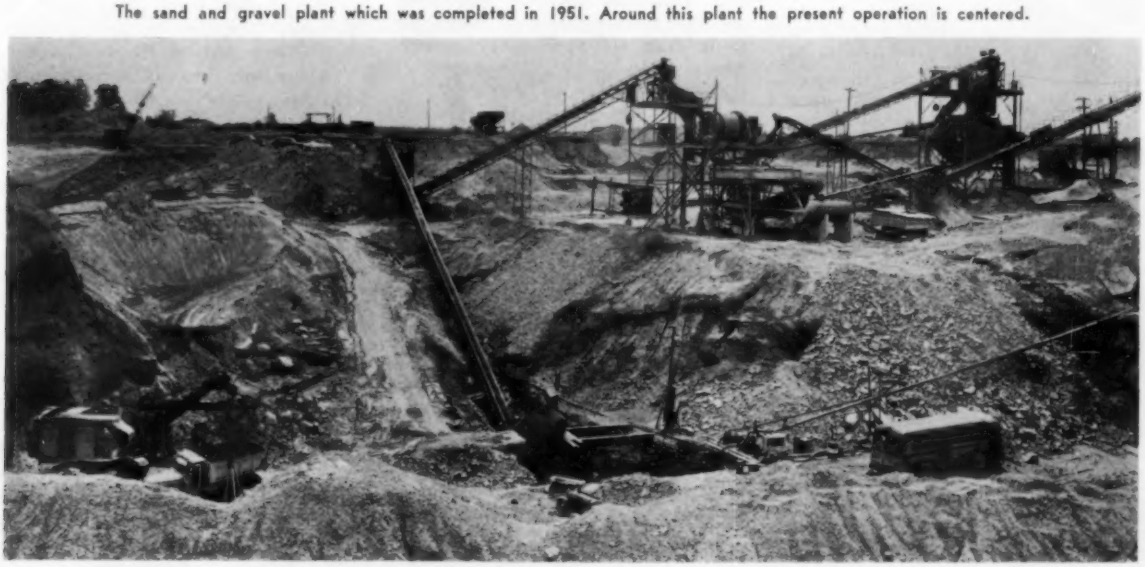
The sand and gravel deposit varies from 70 to 90 ft. in depth, and under it is a deposit of limestone of unknown depth. The gravel deposit has a dirt overburden which, with dirt and clay seams, is about 25 percent of the total. A large percentage of the gravel also requires crushing. Excavation had never been carried to the full depth of the deposit because of a clay seam above the rock which ranges up to 15 ft. in thickness. The top 35 ft. of the deposit is suitable for road material — below this it is Grade A.

It was partly for this reason that in about 1937 Mr. May began to consider the possibility of working the limestone deposit; also there was then no important source of crushed stone near Fort Wayne. Core drill holes bored 310 ft. into the rock showed a good quality of limestone, with a few thin clay seams. As a result, it was decided to go ahead with the development of this deposit.

This decision brought to two the major problems which would have to be solved. In order to get at the rock the gravel above it would have to be processed. Then, in order to be able to quarry the limestone, the ground water would have to be removed. In studying these problems Mr. May, Paul Seitz, vice-president, and others visited many other operations throughout the country.

The Smith Engineering Works was commissioned to design a sand and gravel plant which could remove the

The sand and gravel plant which was completed in 1951. Around this plant the present operation is centered.



A general view of the sand and gravel plant when completed in 1951, showing the arrangement of equipment.

dirt and clay encountered in excavating to the rock's surface. Unusually complete provisions for washing include a rotary scrubber. This plant was completed in 1951 and had a capacity of 150 t.p.h.

Serious efforts to overcome the water problem were then begun. Constant pumping since 1940 has kept the water level down far enough for dry excavation of the sand and gravel; but it was not until 1951 that the rock surface was reached. During this long struggle there were many setbacks due to heavy rains, pump breakdowns, etc., which several times shut operations down for long periods.

In 1952 excavation of the rock was begun, and the plant was alternately fed rock or sand and gravel as the demand required. Sometimes it was possible to operate up to three months on one material before changing. As the sand percentage was high, the processing of rock helped balance the output.

The next step, in 1954, was the installation of additional facilities to permit the feeding and processing of sand and gravel and crushed stone simultaneously. This dual operation has a capacity of 125 t.p.h. of sand and pebbles and 200 to 250 t.p.h. of crushed stone. During all these years Mr. May also kept on in the contracting business, but in 1954 he dropped this in order to concentrate on the aggregate business. Some of the contracting equipment is used in this operation.

As the quarry has now been developed to the point where further improvement is possible, additional equipment is being installed to increase the efficiency and capacity of the crushed stone plant. A 42- by 48-in. Lippman jaw primary crusher will be installed in the bottom of the quarry. A 30-in. belt conveyor 220 ft. long will feed to a surge bin at plant level. A 460-ft. conveyor will connect the surge bin to the secondary crushing station. A new 4- by 12-ft. 3-deck Deister washing screen will also be added.

Pumping is necessary around the year to keep the quarry dry. Two pumps—one an 8-in. unit and the other a 6-in.—are used at the rock's surface, and three pumps—two 8-in. and one 6-in.—in a pit in the bottom of the quarry. The latter are self-priming pumps. Usually pumping is at the rate of 1,500 to 1,800 g.p.m., but up to 4,000 g.p.m. is required during rainy seasons.

The sand and gravel deposit averages 75 ft. in depth and contains about 25 percent dirt and clay, which must be wasted. This material includes about 4 ft. of soil overburden and occasional seams of clay near the rock surface which in places are 15 ft. deep and extend to the rock. The sand and gravel—75 percent of the total—consists of about 80 percent sand and 20 percent gravel, of which a high percentage is large pebbles. The top 35 ft. of the deposit is sand, with not more than 1 percent of gravel over ¼-in. This material makes excellent concrete sand. Below this level, in some places, there are clay seams, and in other places up to 20 ft. of sand and pebbles.

The gravel deposit is dug in one operation—dirt, clay, and all, except where the clay is heavy. Some of this clay is removed separately and sold as fill. Digging is done with a 2½-cu. yd. Northwest 80D diesel shovel. Three trucks with 5-cu. yd. dump bodies haul this material up 40 ft. in 700 ft. to the sand and gravel plant receiving hopper.

The rock deposit is a geological mixture. The top 10 ft. is in the Hamilton group of limestones and is a gray, finely crystalline dolomite. The next 29 ft. is Kokomo limestone, also dolomitic. This is a softer and more silicious stone and is essentially a single massive bed. The stone below this level is now being tested by the Indiana State Geological Survey. It is a very hard and dense rock known as reef stone.

Drilling of the limestone is done with a Joy TM500 percussion drill using 2-in. round steel in 20 ft. lengths and 4-in. Joy carbide-insert bits. Originally holes in the top 35-ft. level were spaced 18 ft. apart, with 12-ft. burden, but this method resulted in rock too large for the original crusher. Now 10-ft. spacing and 8-ft. burden are used, resulting in much better breakage. The same yield was obtained—2⅝ tons per lb. of explosive—but this closer spacing and the installation of a larger primary crusher increased the capacity of the crushed stone plant about 30 percent. Best results are obtained with 2-row shots of 19 or 21 holes.

About one-third of the explosive used in each hole is 40 percent gelatin dynamite. Above this a bulky powder—King Powder Company's Detonite—is used. Holes extend 1 ft. below the floor and they are loaded to 6 ft. from the top. Bottom firing is used with millisecond-delay caps in the bottom of the hole and a Primacord trunk tying the bottom cartridge to the top of the hole. A 50-hole capacity blasting machine is used.

A second 25-ft. level has been opened, but operations will be carried down another 30 ft., so that excavation of the sand and gravel can stay ahead of the rock, thus keeping the operation in balance. The rock strata become more massive with depth, and all gelatin dynamite is used on the lower level; otherwise

drilling and blasting procedure is the same as on the upper level.

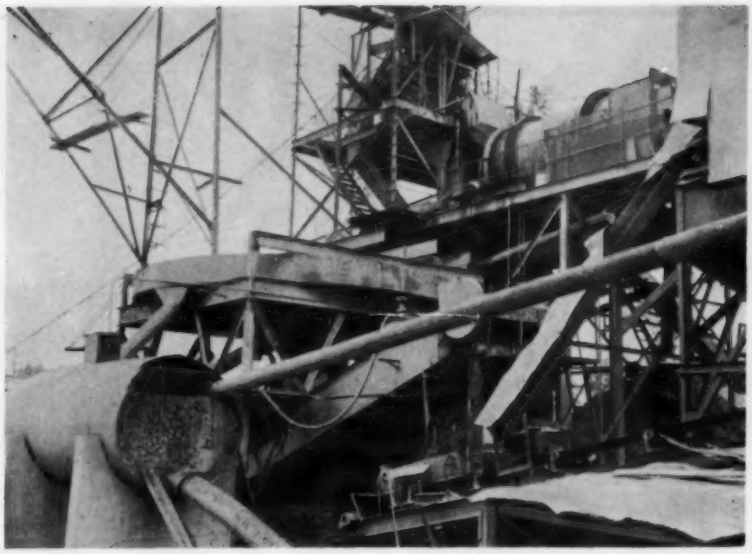
Loading of the rock is now being done with a 2½-cu. yd. P&H 955A shovel with a Caterpillar 337 engine equipped with a torque converter. Euclid 15-ton trucks haul the rock up a steep grade (60 ft. in 600 ft.) to the primary crusher at the plant. During this winter a new and larger primary crusher will be installed in the quarry, and a belt conveyor will feed to the plant.

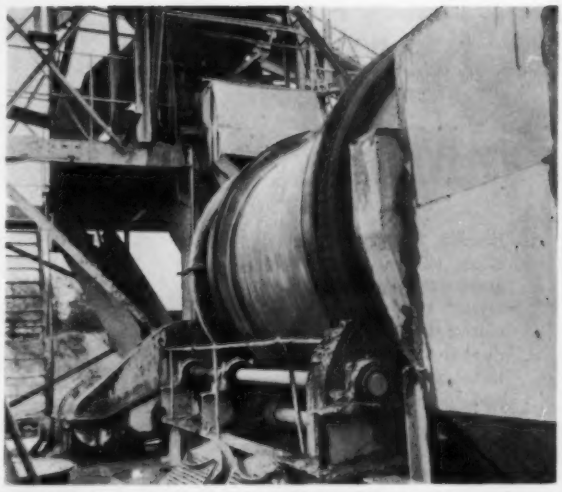
An Austin-Western pan feeder now discharges the stone over a 5-in. grizzly into the No. 2540 Austin-Western primary jaw crusher. The grizzly throughs and the crusher product are discharged onto a 30-in. by 60-ft. belt conveyor and then to a 30-in. by 250-ft. conveyor to the 4- by 10-ft. Telsmith 2-deck scalping screen. The 2- to 3½-in. rock over the split-bottom deck goes to a bin as No. 1 stone. The ⅞-in. minus material through the bottom deck goes to another bin as No. 63 stone.

The plus 3½-in. rock over the top deck of this screen is chuted to a Telsmith 13B gyratory secondary crusher. The minus 2¼-in. product of this crusher and the ⅞- to 2-in. material through the second half of the bottom deck of the screen are discharged on a 24-in. by 160-ft. belt conveyor. This stone can be discharged to a scrubber station, but this is not now necessary; and it is bypassed through a chute to a 24-in. by 100-ft. belt conveyor to the main screening building.

There the stone is split to a pair of 4- by 12-ft. 3-deck screens—one Telsmith and one Deister Machine Company. These have 2-in. square perforated plate on their top decks,

(*Continued on page* 128)

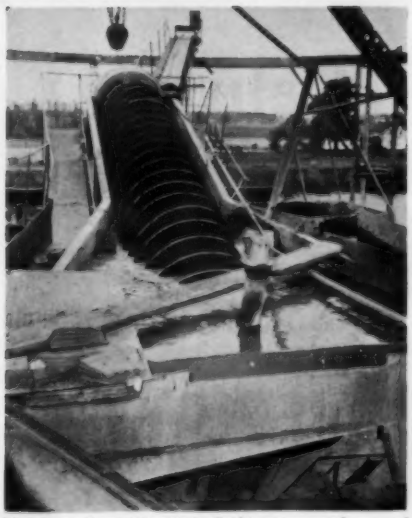




**Above: A general view of the gravel plant showing the screen and rotary scrubber above, with the bowl classifier and screws in the foreground.**

**Right: A closeup view of the 84-in. revolving scrubber which breaks up clay in the gravel. The scalping screen above first removes oversize and sand.**

**The classifier, which removes some of the excess minus 50-mesh material from the sand, and the twin screws below which further classify and dewater.**



**The 24-in. by 24-ft. triple-flight screw washer used for final washing of concrete sand.**

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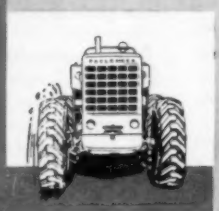

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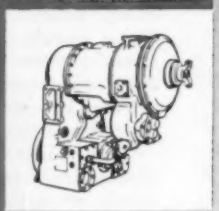

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# Kaiser Gypsum Co., Inc.

## Completes Big Program Of Expansion at Long Beach

By HARRY F. UTLEY

Another ON THE SPOT Report

AS the Kaiser Gypsum Co., Inc., approached its tenth anniversary in the West Coast gypsum industry, the firm opened its newly-expanded Long Beach, Calif., board and plaster plant with considerable fanfare on April 11.

Nearly 600 invited guests gathered at noon at the Wilton Hotel in Long Beach for a civic luncheon, followed by a tour of the new facilities, currently the largest, capacitywise, in the company's chain. The program, completed at a cost of $3,000,000, was begun less than a year ago; it will boost capacity about 60 percent over-all to 210,000,000 sq. ft. of board products and 50,000 tons of plaster annually.

Other Kaiser Gypsum plants are located at Seattle and Antioch, Calif. A board plant began operating at Antioch in February of this year; and a second, larger, plant for producing both plaster and board is at present under construction at Antioch and is scheduled for completion this fall. Combined annual capacity of all four plants will be nearly 600,000,000 sq. ft. of board and lath, plus 85,000 tons of plaster.*

The Long Beach plant was the birthplace of Kaiser Gypsum. As the principal speaker at the dedication ceremonies, Wallace A. Marsh delved into a bit of company history when he pointed out that Kaiser's entrance into the gypsum field actually goes back to 1944. (Mr. Marsh is vice-president and general manager of Permanente Cement Company, and Kaiser Gypsum is its wholly-owned subsidiary.)

"At that time," said Mr. Marsh, "we were known as the Standard Gypsum Company, whose holdings consisted of a shut-down three-kettle plaster mill on the Long Beach waterfront, a four-kettle plaster plant in Nevada, which somehow lacked a rail spur to the main line and was described at the time as being of 'limited value', and an excellent gypsum deposit on San Marcos Island in the Gulf of California. But, with our country at war, we lay virtually dormant for nearly three years, until late in 1946."

Mr. Marsh related how, with the cessation of hostilities, Kaiser Gypsum began to forge ahead until today it supplies one-fourth of all the gypsum products sold in the seven Western states.

The expanded Long Beach plant, although larger, is similar in many respects to the modern Seattle facility, which went into production in the autumn of 1954. Raw gypsum, crushed to minus 4-in. size at the San Marcos quarry, is delivered to Long Beach in 10,000-ton ships. These vessels discharge the ore by boom conveyor into a shoreside hopper, from which it is transferred by a long belt conveyor to the new covered storage building.

This 35,000-ton-capacity dome-shaped building is of full cantilever construction, having steel beams covered with aluminum siding. Storage structures of this type were first used on the West Coast in the Seattle plant and more recently at Antioch. They are filled from the top and reclaimed by tunnel conveyor and elevator which, at Long Beach, feed a new 100-t.p.h. hammermill for reducing oversize to minus ¾-in. size. The pebble gypsum is then elevated to storage bins which feed five Raymond high-side roller mills. The latter, equipped with air-separation in closed circuit, grind to 85 percent through 100-mesh preparatory to calcining.

Calcining is done in five Ehrsam kettles fired by natural gas. The fifth kettle in the line was installed as a part of the current expansion program. Calcining requires about 2¼ hours at a "cooking" temperature of about 250 deg. F., and a "discharge" temperature of nearly 350 deg. F. At the end of this period the batches are dumped into hot pits below and carried by screw conveyors and elevators to the "stucco" bins. Kettle stacks are equipped with mechanical and water-curtain dust control equipment.

In the production of hardwall plaster, the stucco is carried by screw conveyor to a 4¼- by 16-ft. Marcy tube-mill driven by a 75-hp. Westinghouse motor. During milling, the fine stucco granules are reduced to microscopic flakes by the impact of the balls. This practice, standard in the gypsum industry, produces the highest grade of plaster by improving workability and increasing stability against aging.

Screw conveyors carry the mill product to feed bins above three 1-ton weigh-batchers, where retarder and other ingredients are blended in before the batches are discharged to three Ehrsam paddle-type dry mixers. After mixing, the finished plas-

*See PIT AND QUARRY, Jan., 1956, p. 104.

The Kaiser Gypsum plant seen from the harbor side at Long Beach. The ship at dock is the SS. HARRY LUNDEBERG, the company's 10,000-ton-capacity ore carrier. The enlarged capacity will require 300,000 tons of gypsum ore annually.

Kaiser Gypsum's expanded Long Beach gypsum products plant. The 60 percent expansion program, just completed, increases annual capacity of the plant to 50,000 tons of hardwall and special type plasters and 210,000,000 sq. ft. of gypsum board products.

ter is bagged by 3-spout St. Regis packers on the floor below.

In lath and board production the stucco is taken from the hot pits and stored in four 100-ton cylindrical steel bins having conical bottoms. The enlarged board plant is a steel-frame structure covered with sheet metal and has concrete floors throughout. It is 744 ft. long to accommodate the increased lengths of the board machine and the dryer.

Stucco and other additives are proportioned precisely and automatically by weight by Jeffrey-Traylor Waytrol equipment. Controls are centralized, and visual and audio warning systems signal the operator in the event of trouble. Sawdust has now been eliminated as a mix additive in favor of paper-stock pulp, which is prepared from waste paper in an Apmew Aqua-Pulper. Another ingredient, "popped" perlite, is now expanded in the plant's own furnace from purchased sized ore.

The designed dry mix is ultimately discharged into an Ehrsam pin-type mixer at the head of the Ehrsam board machine, feed being synchronized with the speed of the board belts. Water is added in metered amounts, and the slurry is fed to the forming table.

The supply rolls of paper for backing and facing the board unreel under tension at the head end of the board machine. The slurry is deposited on the bottom layer of moving paper first, as the paper is drawn under the mixer to begin its ¼-mile trip down the board line. The top layer of paper is applied at the forming rolls, and the overlapped edges are turned and automatically sealed with an adhesive.

Leaving the forming rolls, the continuous board strip moves on a 57-in. wide white rubber belt. The belt is composed of three flights, or sections—two on 126-ft. centers and one on 228-ft. centers—for a total belt length of 480 ft. The 228-ft. section was inserted into the board line during the expansion program just completed to permit higher travel speed and thus gain a considerable increase in board output. The lengthening was accomplished with practically no interruption to board production!

After it leaves the belt, the board, now sufficiently set, moves along on live rollers. If perforated lath is being made, the familiar plaster-key holes are punched, and an Ehrsam cut-off knife scores at 4, 8, and 12 ft. and severs the lath at 16 ft. Sheathing is cut at 8 ft. and wallboard at 8 ft., or in longer or shorter lengths as desired. After cutting, the sections move at accelerated speed to the end of the machine, where a transfer table inverts and moves them across to the 8-deck Coe dryer which parallels the board machine.

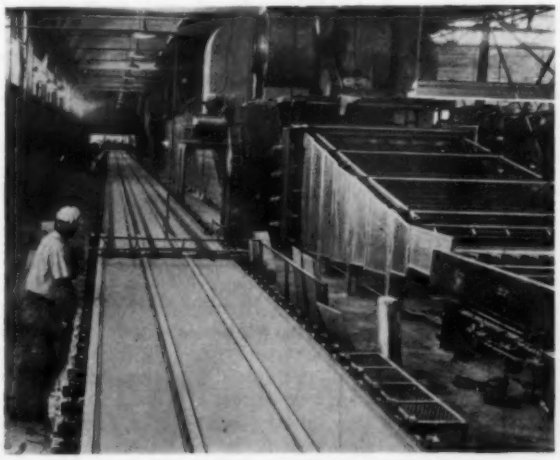
As with the proportioning of the board mix, automation likewise is fully employed to co-ordinate control of the board machine, the transfer table, the tipple, and the dryer itself. These operations are synchronized by a keyed system of Selsyn and electric-eye controls.

The Coe dryer is now 560 ft. in total length, the enclosed section being 461 ft. long. About 200 ft. of this length was added during the expansion program to match drying capacity with the higher output of the board machine. Drying is conventionally accomplished by steam coils and air, induced by a battery of fans. It was necessary to add a second steam generator to handle the requirements of the enlarged dryer, both units being housed in a separate building.

As the finished board comes off the cooling end of the dryer, it is bundled, palleted, and moved by fork-lift trucks to the warehouse or directly into cars on the rail siding alongside the warehouse floor.

John V. Pooler, who was originally plant superintendent at Long Beach, is now operations manager for all plants. John O. Lewis is the Long Beach superintendent. He joined the company in 1947 as a shift foreman and rose to become superintendent in 1949. Prior to his association with the Kaiser organization, he had 23 years experience in the manufacture of gypsum products, most of it in Texas. Arthur H. Darling is board-plant superintendent. Joseph McLellan supervises the plaster mill, and Jack LeFever is plant chemist.

General headquarters for Kaiser Gypsum are in Oakland. Claude E. Harper is vice-president and general manager; Victor E. C. Cole, vice-president and assistant general manager; and Colin L. Campbell, general sales manager.



The board line at the Long Beach plant. The gypsum board, comes out of the forming rolls and is carried down the 671-ft. line on rubber conveyor belts, to be punched (perforated lath), cut to length, and transferred to the dryer for final curing.

## Small-Bore Drilling

(*From page* 103)

Use of the Atlas Copco small-diameter deep-hole drilling method in conjunction with millisecond detonators made it possible to obtain a fairly large tonnage of rock from one detonation on a relatively short quarry face. The blast and noise normally created when a large amount of explosive is detonated at one time in a quarry was reduced to such a degree as to be negligible, due to the use of millisecond detonators, which practically eliminate the shock waves.

Even at the quarry floor level very little rock was scattered, the explosion only being sufficient to break off the rock and drop it at the foot of the face. Owing to the small diameter of the holes, little if any rock is thrown upwards, thus promoting greater safety.

The advantages of this method can be summarized as follows: (1) greater output of rock per unit of explosive; (2) greater output of rock per unit of time; (3) better fragmentation; (4) less secondary blasting; (5) greater continuity of operation; (6) increased safety; (7) lower nuisance value; and (8) better cost estimation. It has been found that this method permits better utilization of the explosive by spreading it evenly over an area instead of concentrating it in chambers or large holes, thus produces an output of at least 6 to 10 tons of rock from one pound of explosive.

The ratio varies with the height of the quarry face and the type of rock. Obviously there is a limit to the economic height to be worked in one bench; this height cannot be defined exactly, but individual quarrymen can soon determine it by experience.

Many factors must be considered besides the amount of the explosive charge. For example, the weight of steels being used in the vertical holes must be increased as the height of the face increases. Rock structure is also a limiting factor in many cases.

Experiment shows that a face 60 to 75 ft. high is ideal. Beyond this height it is necessary to have greater power available to lift the steels from the hole. A simple tripod with a small hand lifting tackle has been used successfully for holes to a depth of 150 ft. However, it is hardly worth while to divide an existing face 90 to 120 ft. high as the two resulting benches do not usually give as economic an output as a single face. If a new quarry is to be opened with this system, it is recommended that the face should be limited to a height of 60 to 80 ft.

This photograph shows a fall of rock and the good fragmentation obtained using deep-hole small-bore equipment.

As the amount of explosive required per ton of rock is lower with this system, a smaller volume of drilled space is required for the explosive. Holes of small diameter permit relatively high drilling speed; and with the light equipment there is little delay between holes. There is no interference with the operations of secondary blasting and removing the spoil since the greater part of the drilling takes place from the top of the quarry. Higher drilling speed, lighter equipment, and benching from the top of the quarry result in a greater output of rock per unit of time and per unit of power.

Because the explosive is more evenly spread with this method, it is true to say that fragmentation of the rock is always better. This is not always obvious from the first shot on a face which has previously been blasted with conventional methods. Such a face is nearly always badly fractured, with large sections ready to fall in one piece. The rock face is always left in a good solid condition when small-bore deep holes are fired, and the second shot then produces much better fragmentation.

## Fourth Quarter and Annual Summary in 1955 Show Rise In Gypsum and Products

Domestic mine production of crude gypsum during the fourth quarter of 1955, as reported to the U. S. Bureau of Mines, was 2,780,083 short tons—9 percent more than in the fourth quarter of 1954 and a record output of domestic gypsum for a fourth quarter. Imports soared, 44 percent more crude gypsum being imported in fourth quarter 1955 than in the same months of 1954. Total consumption of domestic and imported crude gypsum in 1955 was over 14,500,000 tons—more than 2,000,000 tons higher than in the previous record year, 1954.

Nearly all gypsum products were manufactured in record quantities in 1955. Among the uncalcined products, sales of cement retarder and material for fillers and miscellaneous uses were each 7 percent higher than in the preceding year, while sales of agricultural gypsum were off slightly. All industrial use categories showed increases, with the miscellaneous classification up 39 percent, plate-glass and terra cotta plasters up 20 percent, and pottery plasters up 14 percent. All building plasters, except that small quantity going to mixing plants, were up markedly.

Most important from an industry standpoint was a 46 percent rise in output of sanded (including perlite-premixed) plasters; in five years, consumption of sanded and perlited plasters has increased from about 125,000 short tons to almost 600,000 short tons a year. Other important gains among the building plasters were noted for roof-deck, gauging and molding, and Keene's cement.

Record highs were set for both lath and wallboard, each of which increased 18 percent compared with the previous year. Sales of formboard for poured-in-place gypsum roof-deck were up 19 percent.

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**RAYMOND BAG CORPORATION**

Albemarle Division of PAPER MFG. COMPANY
Middletown, Ohio • Richmond, Va.

Raymond
**MULTIWALLS**

**Big production:** at the Camp Dennison, Ohio, plant, a 2¼-yd. Michigan loads out a heaping bucket load of frozen aggregate. Power-shift transmission is standard equipment—cuts seconds off every cycle between truck and pile.

## $76,000* buys *one* 2¼-yd. truck crane or *four* 2¼-yd. Michigan Tractor Shovels . . .

# Here's why Ohio Gravel Co. bought the four Michigans

Ohio Gravel Company operates five plants around the perimeter of Cincinnati. Until a short time ago, ½-yd. and ¾-yd. clamshells and shovels handled all loading from stockpiles. When it became apparent that the Miami plant (300 t.p.h. capacity) did not have adequate loading capacity, Ohio Gravel asked for bids on a special 2¼-yd. mobile crane. According to Walter Flach, V. P. Production, they recognized the need for bigger bucket capacity and better mobility between stockpiles. Bids on the crane ran from $65,000 to $76,000—a substantial price to pay for increased capacity in *only one of the five plants.*

### Had to leave the demonstrator

At this point Bode-Finn Co., the local Michigan distributor, got permission to demonstrate a 2¼-yd. Michigan Tractor Shovel at the Miami plant. The "demonstration" lasted two weeks—that is, Ralph Hautman (Miami superintendent) wouldn't

*Current list price F.O.B. factory for four 2¼-yd. diesel Michigan Tractor Shovels.

let them take the demonstrator away until a permanent machine was delivered. Before the new Michigan even arrived, Ohio Gravel Company bought three more for other plants. *The total cost of the four Michigans was approximately the same as the one crane.*

## Loads as much as two cranes

At the four plants with Michigans, the superintendents agree that one Michigan loads trucks as fast or faster than two ¾-yd. clamshells. With widely separated stockpiles, the Michigans move around the yards as fast as the incoming trucks—27 mph top speed. They consistently get heaping bucket-loads. Power-shifted cycles between pile and truck average about 40 seconds; it takes 4 minutes or 6 bucket-loads to put 19 tons into a dump trailer (see picture).

**A typical heaping bucket-load** of graded bank run comes up well over the 2¼-yd rated bucket capacity. Digging bank run, the Michigan handles approximately 5½ tons per bucket-load.

**Handling clean-up work** in its spare time, the Michigan eliminates stockpile contamination. Unlike the clamshells which formerly handled the job, the Michigan does not pick up dirt as it cleans up around the piles.

## More profits for producer and trucker

Faster travel, faster cycles, bigger bucket-loads obviously make more profits for producer and trucker alike. Ohio Gravel Company recognized this fact when the first Michigan was demonstrated. Your own Michigan distributor will give you this same kind of proof. A chance to demonstrate is all he asks—*you name the job.*

Michigan is a registered trade mark of

CLARK® EQUIPMENT

**CLARK EQUIPMENT COMPANY**
**Construction Machinery Division**
**2479 Pipestone Road**
**Benton Harbor 18, Michigan**

**It took four minutes** to put 19 tons of material into this dump trailer. Six bucket loads filled it. Note that the 2¼-yd. Michigan has plenty of dumping clearance over the 10-ft. high side boards. Even with batch boards in place, the Michigan has no trouble.

### *Pioneer Wisconsin Plant Meets Agstone Demand*

# Mayville White Lime Works— A Progressive, Historic Operation

Another ON THE SPOT Report

THE Mayville White Lime Works of Mayville, Wis., was not only a pioneering lime operation during the earliest days of settlement in that area; but it has continued to be among the first to move in new directions of lime operation during its 80-year history. Through the years the company has kept its production in harmony with variations in the types of product in demand. In the earlier days, for example, the entire output was devoted to calcined stone for construction use; but changing conditions have resulted in a predominantly agricultural market in the area, and 70 percent of the company's production is now consumed in that field.

Two recent "pioneering" steps made by the Mayville organization involved the installation of a screen equipped with an electrically-heated deck (for separating plus and minus 8-mesh fractions in agstone production), and the acquisition of a new type of bagging equipment in which agstone dust is kept "fluidized" by an air flow in the bagging process.

Another interesting feature of this operation is found in the unusual continuity of service on the part of the employees. Over half of the men on the payroll represent the second or third generation in a line of grandfathers, fathers, and sons who have been associated with this concern all their working lives. The present heads of the organization, K. C. and C. G. Ruedebusch, are cousins; they are grandsons of the founder, Charles Ruedebusch Sr. C. H. Ruedebusch, president of the corporation, a son of the founder, has retired from active duties and now resides in Florida.

The heavily-bedded nature of the dolomitic limestone which Mayville White Lime Works is quarrying is evident in this view on the quarry floor. The face has an average depth of 45 ft.

Charles Ruedebusch Sr. had been a merchant who in 1853 established a flourishing trade with the Indians in the area, as well as a mercantile supply for the early settlers and farmers. In 1875 the 80-acre farm tract on which operations were initiated, and are still carried on, was taken over by the grandfather in settlement of a business debt.

Shortly afterward, an increasing demand for lime by the growing number of settlers led to the opening of a quarry on the property and the construction of a pot kiln by the company's founder. This initial effort was followed later by the erection of larger masonry shaft kilns, and by successive changes in quarry haulage that involved mules, horses, electric-powered locomotives, gasoline dinkeys, and finally the present truck system.

Although the original pot kiln was adjacent to the quarry (and

A view of the agstone plant and the main feed conveyor from the primary crusher. In the right background is a conveyor from which one of the two masonry shaft kilns is fed.

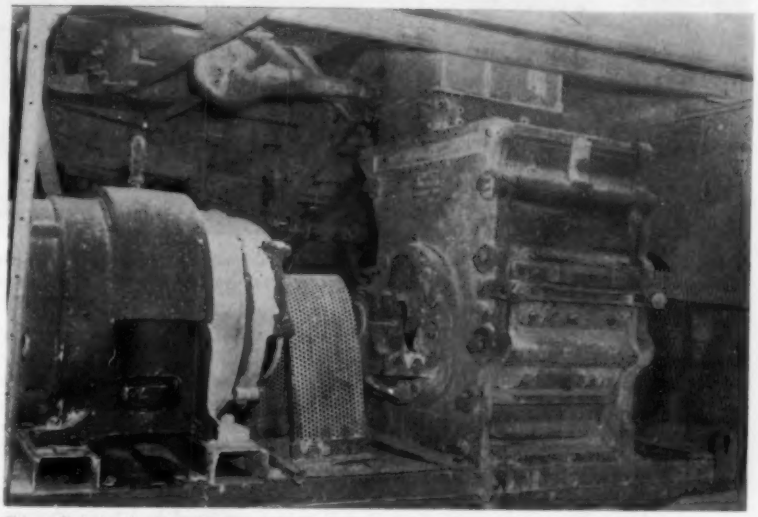
close to an abundant fuel supply in the adjoining woods) at the top of a ridge, the shaft kilns erected later were constructed at a lower level which has since provided for a favorable downhill grade for quarry-to-plant haulage. The present agstone plant, and the kiln building that houses two masonry shaft kilns, were erected to replace earlier facilities which were destroyed by fire about 30 years ago.

The quarry today covers an area of approximately 20 acres, and the thickly bedded dolomitic limestone (Niagaran) is worked over a face averaging about 45 ft. in height. Blast holes are put down to a point about 2 ft. below the quarry floor by a 22T Bucyrus Erie blast hole drill. The 6-in. diameter holes are charged with 5½-in. Hercules explosives—type D in the lower section, and types B and No. 1 in the upper area. A double row drilling pattern is employed with a 12- by 16-ft. spacing. The number of blast holes for a given shot varies seasonally—12 to 18 being used in the warmer months, while only 4 to 6 are drilled for one shot in the winter. The latter procedure is followed so as to avoid having a greater quantity of blasted rock exposed to snowfall. Secondary breaking of blasted material is handled when necessary by a Northwest Model 104 crane from which a U. S. Steel forged billet drop ball is suspended.

A 1½-cu. yd. Northwest diesel shovel is used to load broken rock into the two 10-ton haulage units—International KB11 trucks—which transport the material about a quarter of a mile to the primary crusher hopper. A Pioneer 3- by 15-ft. pan feeder transfers stone from the hopper to a Pioneer 30- by 42-in. jaw crusher. Although a 2½-in. setting is used on the crusher the greater part of the time, two half days each week a 10-in. setting is made in order to supply the two shaft kilns with larger material than that put through the agstone plant. To expedite the process of changing the crusher settings, company personnel installed an I-beam and a 10-ton hydraulic jack under the wedge block. This device has cut the time for changing settings from approximately one hour to about 10 minutes.

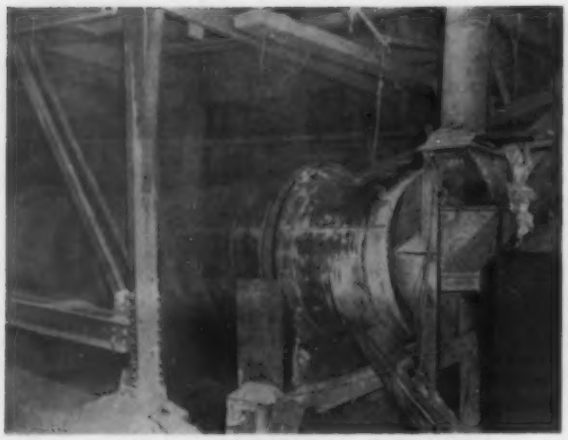
Crusher discharge is carried from the crusher house on a 30-in. by 160-ft. Pioneer belt conveyor and discharged at the top of the agstone plant. During those two weekly periods when stone for kiln feed is required, the conveyor discharge is taken on an Allis-Chalmers 4- by 8-ft. Lowhead screen which has been converted into a vibrating grizzly with 4-in. spacing. Minus 4-in. rock then starts through the agstone processing, while the grizzly oversize is taken out of the agstone plant on a belt conveyor and discharged into the tops of the kilns in the adjoining kiln building.

For the great part of the time, when the primary crusher is set for supplying agstone flow, the grizzly is retracted and the main feed can then go to either of two processing circuits, or to both simultaneously. This is accomplished by means of an adjustable opening in a plate at the



This mill is in the flow between the main feed conveyor and the electrically heated screen, and processes feed for that screen at the rate of 40 tph.

Above: A view of the single-deck screen fitted with 8-mesh screencloth that is electrically heated. A resistance heat of about 100 degrees F is developed. Below: a view of the same screen take a few minutes after the above picture and after the low voltage current had been turned off. Material on the screencloth is moist limestone.



This 4- by 24-ft. oil fired dryer is in one of the two screening circuits. The dried product of this unit is transferred to three single-deck unheated screens.

This crusher was installed to handle quarry production exceeding the capacity of the three hammermills in the two screening circuits. Road material is produced with a ¾-in. setting on the unit.

discharge point of the main conveyor. When this aperture is fully open, the stone is discharged into an 80-ton bin which supplies a Gilson hammermill and the electric screening circuit. If it is partially open, rock drops both into the bin and onto a cross conveyor, to start a separate milling, drying, and screening circuit. A closed plate allows the stone to feed entirely to the latter flow.

In the electric screen circuit a reciprocating plate feeder below the bin transfers pit run material to the Gilson 24 hammermill. Driven by a 160-hp. Western Electric motor, this unit discharges 40 t.p.h. to a bucket elevator that raises the milled stone to the electrically-heated screen—an Allis-Chalmers 5- by 15-ft. single-deck unit.

This screen is fitted with Tyler stainless steel 8-mesh screen cloth. A 440-volt supply to the primary side of the screen's transformer is stepped down to about 10 volts secondary, which with normal feed on the screen, gives a resistance heat of about 100 deg. F. in the screen cloth. Secondary voltage is transmitted to the screen cloth by flexible braided cables. By means of this heated deck, both the need for drying the feed prior to screening and the blinding of the screen cloth have been eliminated. Another pertinent advantage realized has been the reduction of circulating load in this flow since, if the screen were blinded, the agstone product which would ordinarily pass through the screen would necessarily be retained with the larger sizes and thus be recirculated. The company has estimated a saving of $0.13 per ton in the cost of material produced in this circuit as a result of eliminating blinding and pre-drying, and reducing the circulating load.

Throughs from the heated screen are discharged into a 60-ton bin from which they are sold entirely in bulk for both truck and rail shipments. Oversize (chips) are spouted to one of the other mills in the other circuit, or during the off-season are conveyed to a stockpile of road material and blacktop filler.

The 30-in. by 45-ft. cross conveyor on which the plant feed starts through the other flow discharges to a 4- by 8-ft. Allis-Chalmers double-deck Ripl-Flo. This screen is fitted with 1½- and ¾-in. opening screen cloth on the top and bottom decks, respectively. Oversize from both decks is chuted to a pair of 60-ton bins from which the 1½- by 4-in. and ¾- by 1½-in. stone is separately fed to a pair of hammermills. The minus ¾-in. throughs are conveyed out of the plant to a road material stockpile.

Both hammermills are Allis-Chalmers No. 3 Pulverators and are powered by 100-hp. Western Electric motors. The mill to which ¾- by 1½-in. stone is fed also receives

Left: A view of the new bagging equipment installation. Dust collected in the plant is fed to this unit which "fluidizes" the material in its hopper (behind the lamp) to effect a flow of the product into the bags.

Right: Loading of boxcars with bagged product is facilitated by this curving, powered conveyor.

the top deck oversize from the heated screen. Mill discharge is conveyed to the feed end of a 4- by 24-ft. oil-fired Cleaver Brooks dryer, from which the material is transferred to a 100-t.p.h. Chain Belt bucket elevator and raised 60 ft. to discharge over three Universal screens. Two of these units are 3 by 8 ft. and fitted with 10-mesh screen cloth; the third is a 4- by 8-ft. unit and has a 4-mesh deck.

Oversize from all three screens is recirculated to one of the Pulverators. Minus 4-mesh stone from the 4- by 8-ft. unit is chuted to a 50-ft. bin from which it is bagged and sold as barnlime. Two adjoining 50-ton bins are supplied minus 10-mesh material from the other two screens; this stone is bagged as agstone. A pair of St. Regis bagging machines can be simultaneously supplied from any two of the foregoing finished product bins or from one, as desired. Products are packed in St. Regis, Bemis, or National Container multiwall bags, which are then transferred to the warehouse, truck-loading dock, or rail siding on an Atlas bag conveyor. For loading box-cars, a Power-Curve conveyor is used. This unit is made up of a number of grooved spools connected by loops of coiled springs which transmit turning motion from spool to spool. When the conveyor sections are set to turn a corner, the outer springs merely stretch to accommodate the lengthened arc.

A high degree of flexibility has been established in the flow lines of the plant. In one case the discharge of the two Pulverators can by-pass the dryer and then be fed to the bucket elevator that supplies the heated screen circuit from the Gilson mill. All three mills then supply that circuit with about 100 t.p.h. In the event that quarry and primary crusher production exceeds the capacity of the three hammermills, the 1½-by 4-in. stone is fed from its storage bin to a Telsmith No. 24 Gyrasphere crusher set for ¾-in. The product of this crusher is conveyed out of the plant to the road material stockpile.

Dust collection in the agstone plant is handled by two collectors; one, with a 16-ft. cyclone, has a 40-in. Garden City fan, while the other is comprised of a 10-ft. cyclone and a 30-in. Burmeister fan. Both collectors discharge to a bin from which the new packer is supplied. This unit, a Black Diamond Airflow valve-type bag packer made by the Black Products Corporation, incorporates a 4-ft. high fluidizing hopper. Air is introduced into a cloth pad below the hopper at a pressure of about 5 p.s.i. The upward air current going through the dust imparts a fluid motion to the material, which then flows into the bags under its own motion. Presetting of limit switches on the packer nozzle causes the flow to stop when the predetermined weight pulls down on the nozzle. This material is sold as lime feed.

Of the normal daily 800-ton output of all products, approximately 70 percent by volume is sold in bags and bulk as agricultural materials. The barnlime produced is a blend of three different types of lime and is sold as a premium product for neutralizing, disinfecting, and deodorizing dairy barns. This material is marketed in an area that includes Wisconsin, Illinois, and Minnesota. The balance of production is consumed largely within the state. Rail shipments are originated on the Chicago, Milwaukee, St. Paul and Pacific Railroad; truck haulage, including lime spreading, is carried out by contract haulers.

A 13,000-volt power supply is brought to the plant's transformers, which step the voltage down to 440. Most of the total 1,500-hp. represented in the equipment of the plant drives is furnished by Howell motors. The plant was recently rewired for dust-proof electrical controls.

With a crew of 20 men on the daily 8- to 12-hour shifts, this long-standing organization operates on a year-round basis. Not only do 12 of the men each represent over a half-century of family association with this company, but they continue the close connection by living in company houses on the property.

Some of the Mayville crew whose fathers and grandfathers before them have been employed at this operation. Back row, l. to r.: Wm. Brandenburg, plant foreman; Ed. Korth, quarry foreman; K. C. Ruedebusch, secretary-treasurer; Alfred Korth; and Calvin Brandenburg. Front row: Roland Pilsner; Edmund Pilsner; Walter Welak; George Okon; and C. G. Ruedebusch, vice president and manager.

## Florida Mineral Output, Value Show Slight Decline in 1955

According to the U. S. Bureau of Mines, the total value of Florida's mineral production for 1955 is estimated at $101,330,000, or 5 percent less than 1954.

These figures are *estimates* based on data available at this time, and they include estimates of producers and trends over preceding years, as represented by records of previous production.

Due to labor troubles, the phosphate industry suffered a loss of 2,250,000 tons in production and nearly $12,000,000 in total value, based on estimates of producers responsible for 85 percent of 1954 production.

Sand and gravel production, based on responses representing 47 percent of 1954 production, gained 10 percent in tonnage for a total of 4,050,000 short tons, but only 2 percent in total value, $2,925,000, indicating a somewhat reduced unit value at the pit.

Stone production (exclusive of dimension stone) indicated a reduction of 3 percent in volume (down to 13,800,000 short tons) but an increase of 16 percent in total value, which was $19,600,000.

Titanium minerals recorded increases as follows:

Ilmenite increased 27 percent in tonnage and 41 percent in total value. Rutile increased 14 percent in tonnage and 13 percent in total value. Zircon, a byproduct of titanium minerals production, indicated an increase of 68 percent in tonnage and 70 percent in value.

Other commodities, details of which cannot be published without exposure of individual producers' operations, were as follows:

Cement increased 3 percent in tonnage and value, and lime increased 4 percent in tonnage and value.

Clays, including Fuller's earth and clay used in cement manufacture, decreased 6 percent in tonnage but increased 44 percent in total value.

## 1956 FLOOD, HURRICANE AND OTHER

# Casualty Losses Are Tax Deductible

Another P&O Exclusive

EVERY year a good many nonmetallic mineral producers sustain casualty losses of one kind or another. These should be reflected in an income tax return to reduce the tax bill. Losses may even result in a tax refund. An income tax refund cannot be obtained until after the close of the calendar or fiscal tax year. However, operators sustaining losses during 1956 should not wait until tax filing time to determine the exact nature and extent of their losses for income tax purposes.

Losses may arise from accidents, fire, storm, hurricane, earthquake, flood, and similar disasters, or from theft. A dramatic example of casualty losses are those stemming from the alphabetical hurricanes and resulting floods which strike every year with tragic regularity. Other major disasters also cause widespread damage and destruction. However, a loss may be the result of an isolated casualty striking only one business or a single piece of personal property; and the loss may prove no less costly to its victim.

Delay in establishing proof of loss sustained may be fatal. Trusting largely to memory or inadequate records long after the event may result in overlooking the loss entirely or undercalculating the loss. In both cases a higher tax would result. Or the amount of the loss may be challenged by the Internal Revenue Service; and with insufficient proof to support the amount of the loss claimed in the income tax return, the taxpayer is certain to be penalized.

It is unwise to assume that tax counsel can establish the needed *proof* of loss at the time of making the annual income tax return. (As much as 10 months or more may elapse between sustaining a hurricane loss in, say, May or June, 1956, and filing the annual income tax return the following April.) Although calculating the tax deductible loss may best be left to tax counsel, it is the responsibility of the client to supply him with the necessary records and evidence of loss. The sooner this record is built, the more accurate and detailed it is likely to be, and the less chance there will be that the loss can be challenged successfully.

**By HAROLD J. ASHE**

The Internal Revenue Service does not require any one arbitrary kind of proof of loss. However, the proof should be as nearly complete as possible, subject only to destruction of needed records in the casualty. Proof may range from comparative "before and after" photos of the property to an expert's appraisal of the loss, based on the value before the casualty and the value after the event, taking into account salvage value, if any.

The cost of making repairs will be helpful in supporting the loss claimed. However, repairs (for purposes of establishing the loss) should not go beyond the point necessary to restore a damaged property to its pre-casualty condition. A casualty loss should not be misconstrued as an invitation to make improvements which go beyond restoration, or with the idea such improvements can be claimed as a part of the loss.

**What is deductible?** Casualty losses may include damage to or destruction of a business building, equipment, machinery, office equipment, materials and supplies, and any other items of real value. In this connection assets outside buildings should not be overlooked—shrubs and other plantings, surfaced parking areas, fences, signs, and similar items.

**Personal property** — Non-business casualty losses are also deductible, although by a different formula. These losses include damage to or destruction of a residence and its contents, including personal effects. In determining such losses, however, sentimental values are not permissible; only intrinsic values are deductible.

**Insurance recovery** — All losses, business or non-business, must be adjusted to reflect insurance reimbursement, if any. If the loss is completely reimbursed, there is no loss and no deduction, tax-wise. If the insurance exceeds the loss, there is a taxable gain, unless the destroyed property is replaced in conformity with rules spelled out in the regulations.

**Quick tax relief**—An income tax refund, as already pointed out, is not available until after the year-end. However, a taxpayer may get some relief by amending his declaration of estimated income tax on or before the next quarterly tax payment due (June 15, September 15, 1956, or January 15, 1957). If his loss is great enough to wipe out subsequent quarterly payment or payments on his estimated tax, he should make an amended declaration of his estimated tax for an amount not exceeding the total of the payment(s) already made. If he expects to have no income tax obligation for the year, because of the casualty loss, he should so state on his amended estimate, reporting the tax already paid.

**Carry back-carry forward**—If the casualty loss exceeds the year's income, the loss can be carried back two years and, if necessary, be carried forward five subsequent years. Thus, the excess loss above 1956 income can be carried back and be applied against 1954 income, resulting in a partial or a complete refund of the 1954 income tax. How nearly complete the tax recovery will be depends upon whether the loss merely reduces the 1954 income or equals or exceeds it. If an excess loss still remains, it can be applied next against 1955 income—again with a refund on that year's income tax. Finally if, after the carry back of the loss, there is an excess yet to be recovered, it can be applied to future earnings, starting with 1957 and extending, if necessary, through 1961. Thus, a manufacturer or contractor sustaining a heavy casualty loss may get tax refunds as well as future tax relief, if warranted, as a partial offset to his losses.

**Act quickly after the year-end.** The sooner after the year-end that a taxpayer files his 1956 income tax return the more quickly may he get an income tax refund giving him a cash assist in bearing his loss. (This assumes quarterly payments made before the casualty exceeds the tax bill after taking into account the casualty loss.)

If elimination of remaining quarterly tax payments is not sufficient to reflect the loss, tax-wise (see quick tax relief paragraph), the income tax return should be filed as early in January as possible. This procedure will also eliminate the necessity for filing an amended declaration of

(*Continued on page* 135)

# *Let's look at why*

# Quarries Use More Bucyrus-Erie Excavators Than Any Other!

***Big Output*** is the first important characteristic that quarry owners like about Bucyrus-Erie shovels. Balanced design and fast, sure control help operators achieve high-speed work cycles. The modern front end has plenty of strength to withstand tough digging stresses, yet deadweight is avoided so that more power works swinging payloads.

***Dependability*** is a "must" for profitable quarry operation and Bucyrus-Erie Individual Design helps assure the desired reliability. Every part is matched to the rated capacity of the machine and there is correct balance between power, weight and speed for efficient digging.

***Low Maintenance*** is important, too. Bucyrus-Eries have few wearing parts, no complicated "gadget mechanisms" to cause trouble. A positive lubrication system and the liberal use of anti-friction bearings smooths the flow of power to work, with minimum wear on moving parts.

Follow the lead of other quarries and let Bucyrus-Erie shovels work for you. Your Bucyrus-Erie distributor will be glad to furnish complete information on shovels from 3/8- to 4-cu. yd. capacity. For information on heavy-duty, electric quarry machines with capacities from 2½- to 8-cu. yds., write direct.

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BUCYRUS ERIE

South Milwaukee
Wisconsin

75 YEARS OF SERVICE to Men Who Shape the Earth

# Pioneer Ohio Crushed Stone Producer Has Profitable Rental Sidelines

## unusual flexibility permits production of wide range of stone size and agstone

THE J. M. Hamilton & Sons Company, Marion, O., is one of the pioneer crushed stone producers of that state. The 500-acre property just outside of Marion has been in the family since the 1870's. J. M. Hamilton, father of the present operators, opened up a quarry in 1905 with a 20-t.p.h. crushing and screening plant. Stone was loaded by hand into horse cars, and the plant was steam powered.

Modern methods were adopted as they were developed, and the plant capacity was increased gradually to the present 50 t.p.h. Drilling, at first, was done by hand, later by tripod steam drills, and now by churn and wagon drills. Haulage methods progressed from horse cars to locomotives and cars to truck. For loading, the company in 1918 bought the fourth Osgood shovel (No. 304) made in Marion—a wheel-type steam shovel, which has, of course, since been replaced.

There has been no desire on the part of the owners to enlarge the plant beyond the point necessary to take care of the local area comfortably. They did, however, expand into other related fields and, with their subsidiaries, operations are carried on as a corporation. The contracting business is largely excavating, and heavy equipment hauling is done. In connection with these is a heavy equipment rental business supplying shovels, cranes, bulldozers, air compressors, pan scrapers, etc. Of the 500-acre farm 150 acres is good limestone, 300 acres is farmed, and the balance is pasture, etc. The farm is operated as a partnership. O. E. Hamilton is president of the stone company and A. M. Hamilton is secretary and treasurer.

Short wave radio is important in the operation of these businesses, especially the excavating. Three shovels, two bulldozers, and two pickup trucks are radio-equipped. The station is on the 152 megacycle band. The base station is a Motorola with a 147-ft. antenna, and most of the mobile sets are of the same make.

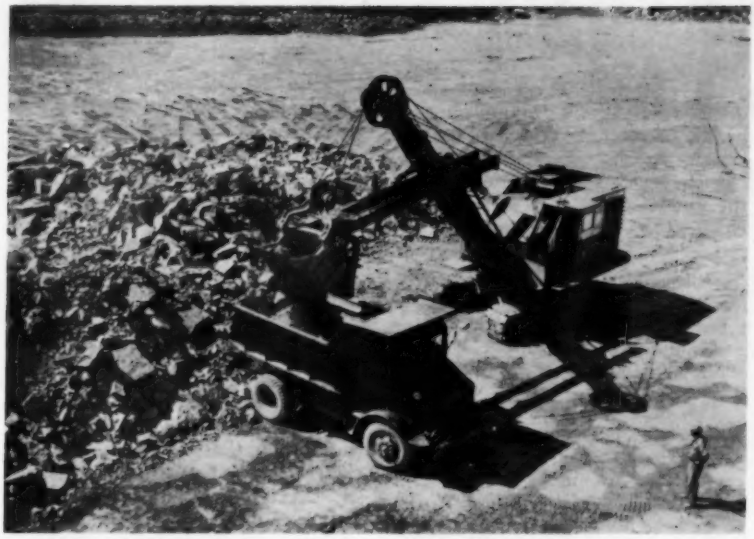
The deposit is virtually inexhaustible. Under an average of 4 ft. of overburden there is from 0 to 10 ft. of Delaware limestone, then 26 ft. average of Columbus, 5 ft. of shale, and 475 ft. of Niagara limestone. At present a 26-ft. average face is being worked, and no attempt is made to separate the Delaware and Columbus limestones as both meet all specifications for the various products made.

The plant of J. M. Hamilton & Sons Company, with the radio telephone antenna above. The pond in the foreground supplies water for operations.

Drilling is done with a Loomis 6-in. churn drill for the full height of the face. Holes are spaced 9 by 9 ft., and shots are made in two rows with delay caps. Some of the old shallow ledges which had been hand-loaded are now being cleaned up with a Cleveland wagon drill. Holes are spaced 3½ by 4 ft., and delay caps are used. Hercules Powder Company products are used exclusively — the present dealer's grandfather started supplying the Hamilton firm when it originally started the operation.

Loading of the rock is done by a Marion 362 shovel with a 1½-cu. yd. dipper, a Caterpillar D 326 high-speed diesel engine, and a Torcon torque converter. The quarry floor is very regular and easily kept clean for the two International trucks with Marion 8-cu. yd. bodies. These haul about 400 ft. to the ramp of the primary crusher.

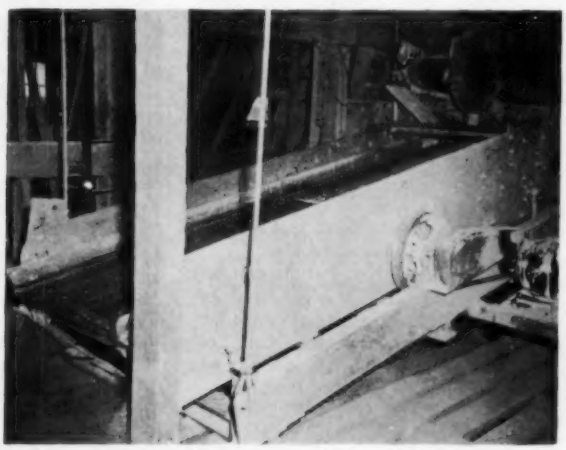
A Jeffrey 24-in. by 16-ft. feeder with aprons keeps a steady supply of stone going into the 25- by 40-in. Jeffrey jaw primary crusher. The minus 4-in. product is carried on a 20-in. by 130-ft. belt conveyor to a 3½- by 7-ft. double-deck Niagara scalping



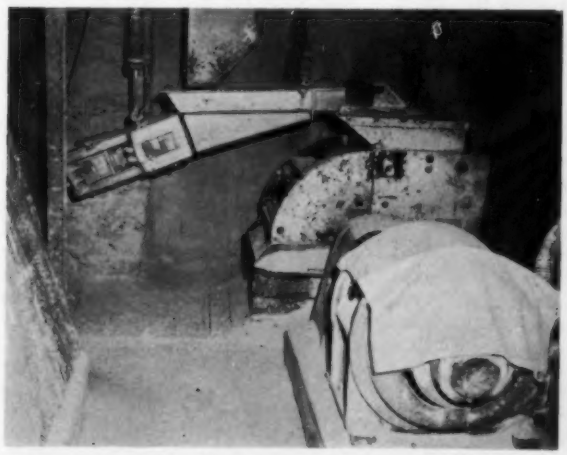
The diesel shovel loading an 8-cu. yd. truck in the quarry. Note the naturally smooth and even quarry floor.

The apron feeder discharging stone into the primary jaw crusher.

The 4- by 10-ft. 2-deck screen used for fine sizing. The belt conveyor below carries minus ¼-in. material to another screen.



The belt conveyor feeding minus ¼-in. material to a 3- by 10-ft. single-deck screen which makes No. 0 stone and agstone.



This magnetic vibrating feeder and a 12- by 24-in. hammermill are used to reduce No. 4 stone to agstone.

Left to right: A. M. Hamilton, secretary-treasurer; Mrs. I. Donithen, bookkeeper; and O. E. Hamilton, president.

screen. Only one deck is being used, with 1-in. cloth on the first half and 4-in. on the last half. The minus 1-in. material is sold as berm aggregate No. 5 and is carried by a belt conveyor and bucket elevator to a150-ton truck loading bin.

The 4-in. plus stone through the second half of the deck goes to a 3-ft. Symons standard cone crusher. The minus 4-in. screen throughs and the minus 1½-in. product of the crusher are taken by a bucket elevator to a 3½- by 7-ft. 3-deck Niagara screen. This is equipped with 4-, 1½-, and 1-in. wire cloth. The plus 4-in. and 1½-in. to 4-in. sizes are chuted to bins. If desired, the latter can be chuted to a 2-ft. Symons Short Head cone crusher and the minus ½-in. product returned to the conveyor and screen in a closed circuit. The 1- to 1½-in. stone goes to a bin as concrete stone.

The minus 1-in. stone through the bottom deck of the screen goes to a 4- by 10-ft. Seco 2-deck screen with ½- and ¼-in. wire cloth. A ball tray under the bottom deck keeps it from blinding. The ½- to 1-in. stone (No. 4) and the ¼- to ½-in. stone (No. 6) go to 75- and 100-ton bins, respectively. The minus ¼-in. material is carried on a belt conveyor to a 3- by 10-ft. Seco 1-deck screen with .095 Tyler Ty-Loy wire cloth. The two sizes produced, No. 0 and No. 10 (agstone), go to separate bins.

Any surplus of No. 4 stone can be ground into No. 10. It is fed from its bin by a Jeffrey electric vibrating feeder to an Eagle Crusher Co. 12- by 24-in. hammermill. A screw conveyor and bucket elevator feed to another 3- by 10- ft. Seco 1-deck screen with .095-in. cloth. The product—agstone—goes to a bin. Of the 50 t.p.h. output to the plant, 5 t.p.h. is agstone, and the final hammermill circuit can produce an additional 10 t.p.h. of agstone.

The flexibility of the plant layout is evident from the fact that by changing any one panel on the scalping screen—replacing the 4-in. with 1½-in. cloth—three additional sizes of stone can be made. The key to efficient production is the accuracy of the primary crusher. Nothing over 4½-in. size must pass it, in order to keep the flow in balance. Wear in the crusher jaws is compensated for by adding 1/16-in. shims.

The bins total 800 tons in capacity and load to trucks in two passages. Excess of any product is stockpiled by a 7½-ton Oshkosh 4-wheel-drive truck. Reloading into trucks is done by two Haiss loaders—a 75W and a 77W — and a ½-cu. yd. Osgood shovel.

## May Sand & Gravel

(*From page* 111)

¾-in. square plate on their middle decks, and 3/16-in. wire cloth on their bottom decks. Hannon electric heaters connected to the bottom deck have greatly increased the screening efficiency. The ¾- to 2-in. rock off the middle decks goes to storage as No. 2 stone; the 3/16- to ¾-in. rock off the bottom deck goes to storage as No. 9 stone; and the minus 3/16-in. material through the bottom deck goes to storage as No. 10F stone. These products are stored in a 3-compartment Johnson steel bin with a total capacity of 100 cu. yd.

The plus 2-in. rock over the top decks of the two screens is ordinarily chuted to a 36S Telsmith Gyrasphere crusher. The minus ⅝-in. product is carried on a 24-in. by 70-ft. belt conveyor which can either bypass this material back to the conveyor to the two screens in a closed circuit, or feed it direct to a 3- by 12-ft. Simplicity 2-deck screen. This has ¾-in. and 3/16-in. wire cloth on its top and bottom decks, the latter connected to a Hannon electric heater.

In order to compensate for the present limited crushing capacity the plus 2-in. oversize of the twin screens is sometimes fed to a surge pile for recrushing over week-ends, etc. This step will be eliminated when the new primary crusher is installed.

The rock over the top deck of the Simplicity screen is returned on a 24-in. by 50-ft. belt conveyor to the Gyrasphere crusher. The 3/16-in. to ¾-in. material off the bottom deck (No. 9) and the minus 3/16-in. throughs (No. 10FF) are discharged into the two compartments of a 15-cu. yd. bin. All of the storage bins load to trucks for shipment or for stockpiling. It is planned to install a stockpiling conveyor system.

Sand and gravel from the pit is discharged on an 8-in. rail grizzly over a 10-cu. yd. hopper at the plant. The few boulders retained are removed by hand. A reciprocating plate feeder discharges the material on a 4- by 6-ft. Deister single-deck screen equipped with 4-in. square punched plate. The plus 4-in. gravel —about 5 percent of the total—is used to prevent bank erosion.

The minus 4-in. material is carried on a 24-in. by 285-ft. conveyor to the scrubber station, where it discharges on a 4- by 12-ft. Telsmith 2-deck vibrating screen. This is equipped with hexagonal punched plate—¾-in. on the top deck and 9/32-in. on the bottom deck—and sprays. The top deck is not used, serving only to help break up lumps. The 9/32-in. to 4-in. gravel off the bottom deck of this screen is discharged into an 84-in. Telsmith Superscrubber. This cylindrical unit is driven at the rate of 29 to 30 r.p.m. by a 100-hp. motor. Inside it near the discharge end is a cylindrical revolving core with impact paddles to help break up clay, etc. This core is revolved independently in the same direction as the barrel, but at 265 r.p.m., by a 30-hp. motor. There is a cylindrical dewatering screen section at the end of the scrubber, over which the ¼-in. to 4-in. gravel passes, to be chuted to ground storage. This material will be processed by additional crushers and screens to be installed later.

The minus ¼-in. material from the scrubber and the minus 9/32-in. fines from the Telsmith screen are fed to a Wood Autovortex classifier. This removes some of the excess minus 50-mesh material, which is flumed with the water to waste.

The sand from the classifier goes to an 18-in. by 20-ft. Telsmith twin-screw classifier from which the overflow also goes to waste.

A 24-in. by 165-ft. belt conveyor carries the sand to the final screening station, where it is discharged to a 4- by 8-ft. Deister Machine Company 2-deck screen. The top deck is equipped with 4-mesh slotted wire cloth and the bottom deck with 8-mesh slotted cloth. The plus 4-mesh material over the top deck is roofing gravel, which is discharged to a 100-cu. yd. concrete bin. The material over the bottom deck, No. 14 (No. 2 torpedo or concrete sand), goes to a 24-in. by 24-ft. Western Machinery Company triple-flight screw washer for final washing. A 24-in. by 60-ft. stockpiling conveyor discharges this sand to a pile for drainage. The sand through the bottom deck is mason's sand (No. 1 torpedo), which goes to a 14-in. by 14-ft. Eagle Iron Works twin screw for final washing. A series of two 24-in. belt conveyors carries this product to ground storage.

The waste water and the 10 to 15 t.p.h. of sand from these plants is flumed to an 8-in. Amsco dredge pump, which feeds it into a waste pond. This pond is 2 acres in extent and will be filled to a depth of 8 or 9 ft. When this is filled up, this material will be pumped into two old gravel pits about 7,000 ft. from the plant, which are reserved for this purpose. A trap in the flume makes it possible to divert any desired amount of this waste to be sold as fill.

The company has a very attractive office building at the entrance to the property, where the truck scales are also located. William P. May is president and P. W. Seitz is vice-president. J. W. Rooney is superintendent.

## *Minnesota Sands Aid Oil Recovery*

# Silica Sand Corporation— A Versatile New Producer

Another ON THE SPOT Report

ALTHOUGH many Minnesotans are probably unaware of it, one of their state's natural resources is playing an important part in the far-flung exploitation and further recovery of a vastly different natural resource—oil. About two years ago the Silica Sand Corporation acquired a deposit of exceptionally high-grade silica sand near Ottawa, Minn., and erected a plant —incorporating what is said to be the only washing facility for this mineral in the state.

**By BUREN C. HEROD**

A prime purpose in establishing the operation was that of supplying silica sand for the hydraulic fracturing method, developed and patented by the Stanolind Oil & Gas Company, Tulas, Okla., to increase oil flow from "tight" formations into old or new wells. In brief, the Hydrafac process involves forcing a highly viscous liquid (gasoline, crude oil, kerosene, etc. . . . to which Napalm soap is added) into a formation as a hydraulic fracturing medium. The liquid used carries a specially graded sand; and when viscosity drops, the sand is left as a propping agent in the fractures formed.

Due to its unusual purity and high content of clean, rounded, coarse-grained particles, the Silica Sand Corporation's deposit is particularly suited to the above process. The same features establish the material as well suited for blast, plaster, and foundry sand, and for optical glass.

Now only three years old, the company was incorporated in 1953 by a group of Minnesota business and professional men. The tract of approximately 500 acres which was acquired by the new concern lies adjacent to the Minnesota River about one mile south of Ottawa. The deposit, which is in the Jordan formation, is somewhat similar in appearance to the St. Peter formation, as found at Ottawa, Ill. However, the former is older in geologic age, and has a higher percentage of round coarse particles. Only about 10 percent of the material recovered is minus 100-mesh, while approximately 67 percent consists of plus 50-mesh sizes.

This deposit had been previously worked but only intermittently and on a small scale. There had never been a processing plant in the area. The Longyear Company was retained, and when an exploratory drilling program had established an area of recoverable sandstone exceeding 100 acres, company personnel proceeded with plans for the construction of a 750 t.p.d. plant.

Erection of the plant structure, which is on a site next to a branch of the Chicago, St. Paul, Minneapolis and Omaha Railway, was started in April, 1954. The all-steel structure, covered with galvanized sheet siding over fiber glass insulation, was completed — with equipment installed—and in operation by December 1, 1954. Increased demand has already caused the company to install three more screening units and to erect four more silos since that time.

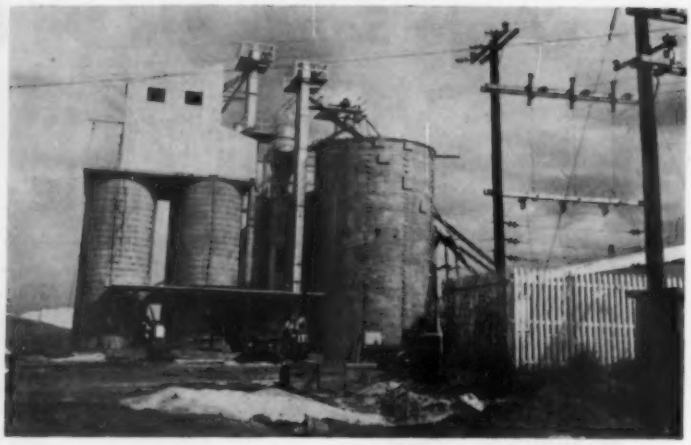
To provide water for the hydraulicking recovery method used in the pit, the latter was opened near a small lake on the property. This temporary supply will be replaced when a sump has been established in the pit. Overburden, averaging 8 ft. in thickness, is easily removed by a ¾-yd. Lima shovel since it consists of a glacial detritus underlain by badly weathered and fissured limestone.

Although the deposit averages more than 110 ft. in depth over the area, a 30- to 35-ft. face has been opened to keep the pit floor above a fairly high water table. Very little blasting is required since the deposit is rather friable and can be bulldozed within the effective range of a hydraulic monitor on the pit floor.

Water is drawn from the small lake by an 1,800-g.p.m. pump and transferred at a pressure of 85 p.s.i.

A general view of the Silica Sand Corporation's pit. The bulldozer is used to put the material within the effective range of the hydraulic monitor. The latter washes sand into the sump of a hydraulic lift or ejector.

This booster pump furnishes water at 265 p.s.i. to the pit. The 8-in. line from the leg of the "T" in the foreground carries water to the plant.



An end view of the plant, showing the four 250-ton finished material silos (left) that were recently erected, and the 1,000-ton silo (right).

through a 10-in. line to a "T." From one side of the "T" an 8-in. low-pressure (75-p.s.i.) line (Naylor Spiralweld pipe) carries water to the plant. On the other side, an 875-g.p.m. booster pump furnishes water at 265 p.s.i. pressure through a 6-in. line to the pit. Both pumps are 100-hp. Allis-Chalmers units.

During the one-shift pumping operations in the pit, the hydraulic monitor flushes material to three separate siphons, or hydraulic lifts, which in turn transfer the pit-run material to a centrally located scalping screen. The latter, a 3- by 8-ft. unit, is fitted with ¼-in. screening. Oversize is pumped 1,000 ft. to the plant through a 5-in. steel pipeline by three Allen-Sherman-Hoff BC-3-5 centrifugal pumps. These rubber-lined units are mounted in series, and pump sand to the plant at the rate of 1,000 t.p.h. They are driven by 40-hp. Allis-Chalmers motors.

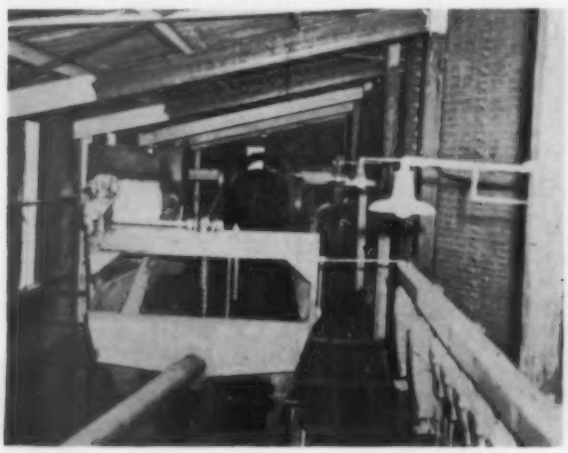
A view of the spiral washer-classifier to which the feed line from the pit discharges.

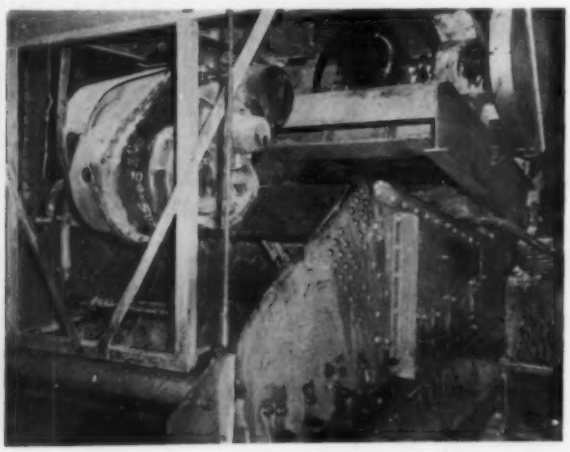
At the plant the pit sand line discharges into a feeder box from which an Akins 54-in. by 32-ft. spiral washer-classifier is fed. The spiral is driven by an Allis-Chalmers 7½-hp. gearhead motor, and has an adjustable weir that is normally set for an overflow of 150-mesh material. The latter is piped to a settling pond and the remainder of the sand is fed to an Allis-Chalmers 5- by 12-ft. Low Head vibrating screen for further washing and sizing. This screen is fitted with 10-mesh cloth and is equipped with rubber ball compartments to prevent blinding. Oversize (about one truckload per week) is hauled away. Minus 10-mesh sand passing the screen deck drops to a hopper, from which it is pumped (at 100 t.p.h.) to the top of the plant by an Allen-Sherman-Hoff B frame pump. This rubber-lined unit is driven by a Fairbanks-Morse 40-hp. motor.

At the upper level the sand is discharged to a pair of 4- by 10-ft. Tyler Hum-mer screens equipped with V50 vibrators and 40-mesh screen cloth. Material passing the screens is piped to a stockpile from which shipments for foundry and glass use are processed. Plus 40-mesh sand is sent to one of a pair of 24- by 42-ft. drain and storage silos. Each of these Neff & Fry concrete-stave structures has a live storage capacity of about 750 tons. Each silo is fed on alternate days, an arrangement which allows the sand in the companion unit to be drained and the moisture to be carried out *via* a gravel bed and field tile at the bottom.

After the sand has been drained (which lowers the moisture content to about 3 or 4 percent), it is raised in an open inclined bucket elevator to discharge into a 7- by 40-ft. steam coil dryer equipped with 1-in. coils. A 150-hp. Bros WZ oil-fired boiler furnishes steam for drying at a pressure of 125 p.s.i. A David Stout Sons pump returns the condensate to the boiler. Depending on moisture content of the sand supplied, dryer output is from 80 to 100 t.p.h.

The 5- by 12-ft. screen which follows and is supplied by the spiral classifier. It rejects plus 10-mesh material.





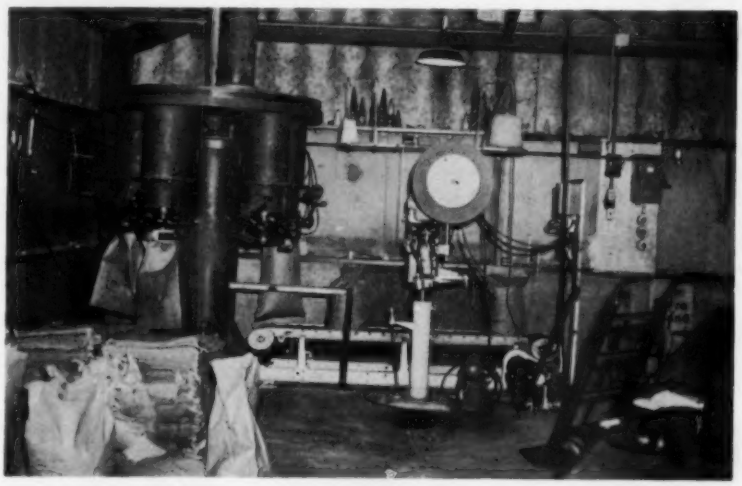
Hot sand discharged from the dryer through sliding gates is received on a heat-resistant conveyor belt and carried to a 57-ft. Jeffrey bucket elevator. The latter raises the dried sand to the top of another 24- by 42-ft. Neff & Fry silo. An inclined shelf in the upper section receives the bucket elevator discharge, to maintain a 60-ton live load for direct feed to the screens following in the flow. When the shelf holds a capacity load, the overflow drops into the lower section of the silo, from which it can be again raised to the shelf by the feed elevator.

Sand is fed from the shelf storage of the silo to a battery of four Tyler Hum-mer 4- by 15-ft. screens for the first separation in the final processing. These screens are fitted with 30-mesh screen cloth. At this point, two separate processing circuits are originated.

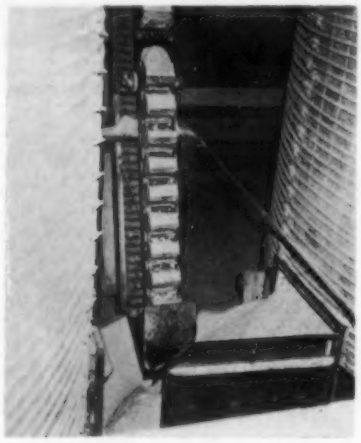
In one the Hydrafrac material is processed by sending oversize from the preceding four screens to a 4- by 12-ft. Tyler Ty-Rock unit fitted with 20-mesh Ty-Rod wire cloth. Oversize from this screen is fed to a 4-ft. Sweco separator which has square 20-mesh opening screen cloth. Throughs from both the Ty-Rock and the Sweco (20- by 40-mesh) are raised in a 57-ft. Jeffrey bucket elevator and discharged into a 1,000-ton finished-product silo. Oversize from the separator is piped to one of the four new 250-ton finished-material silos as sand blast material.

In the other processing circuit, the sand passing the four initial screens

(*Continued on page* 135)

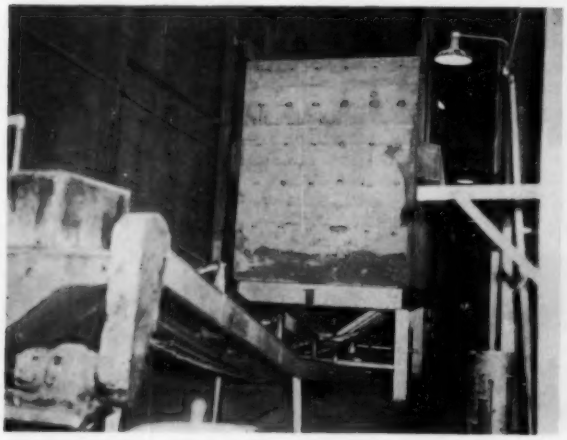


A view of the bagging department at one end of the steel building, which also houses the laboratory, the office, and the warehouse.

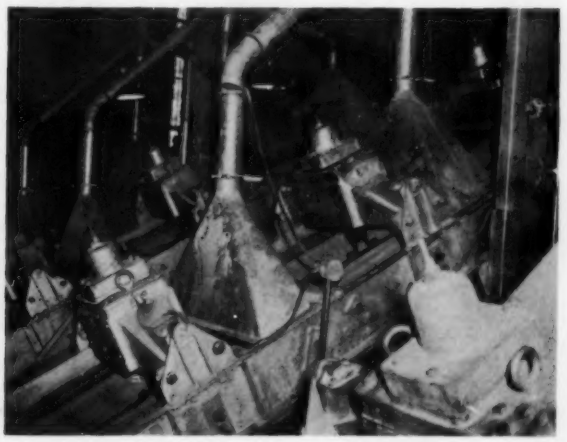


From either of drain silos, right and left, washed sand is raised in the open bucket elevator to the top of the dryer.

Right: From a 100-ton pocket at the top of the 1,000-ton finished-product silo (left) sand can be piped to the bulk loading point (center) or the bagger in the steel building at left.



Below, left: The steam coil dryer processes 80 to 100 t.p.h. A heat-resistant conveyor belt is seen below the dryer.



Below: A battery of 4- by 15-ft. single- deck, electrically vibrated screens used for the first separation in final processing.

# Norwegian Agstone Producer Records Impressive Growth

Another P&Q Exclusive

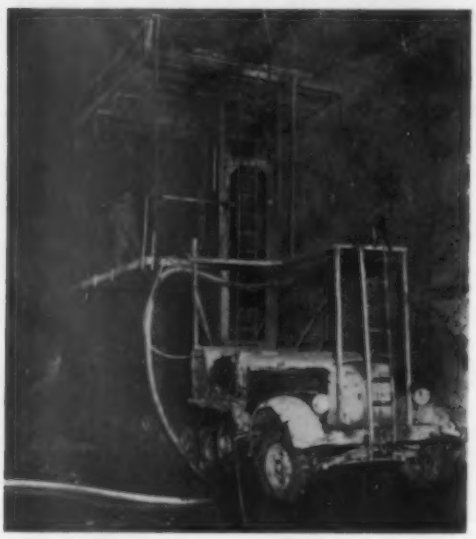
FOR a period of 35 years an operation in Norway that has attained the status of a leading agstone producer in that country has undergone a constant succession of changes, due to new operating methods and a fluctuating agricultural economy. The net effect has been highly favorable, with the result that this company, Franzefoss Bruk A/S, is now putting into effect plans for meeting Norway's total demand for agstone. Last year one-sixth, or 30,000 tons, of the company's total output was marketed as ground agstone or ground dolomite for glass manufacture, as opposed to a total output of all products of only 6,100 tons in 1935. Current expansion efforts are expected to provide, by 1961, a total annual production of about 500,000 tons, of which approximately 140,000 tons, it is considered, will be consumed in the agricultural field.

Back in 1917 W. B. Markussen, who founded the company, bought a farm about 10 miles from Oslo. At several places on the tract there was evidence of the removal of limestone which had been used in the construction of cloisters, churches, and the fortress of Akerhaus during the Middle Ages. A small waterfall, called Franzefoss, on the property led Mr. Markussen to the decision to use it to furnish power for an agstone plant, since the market for that material was showing a healthy growth.

Production was started in 1920 with a small plant that had an output of one ton per hour. The waterfall provided about 80 hp. for turbines which furnished direct power transmission to the machinery. Equipment included three Svedala units—a jaw crusher, a hammermill, and a ball mill—and a cyclone. It was desired to produce a material of which 80 percent would be minus 0.2 mm. When difficulty developed with the ball mill, it was replaced by a roll crusher, and satisfactory production was realized.

In a few years, however, the depression of the middle 1920's practically eliminated the agstone market, and in an effort to keep the business in existence, Mr. Markussen sold raw stone to a paper pulp factory. A small screening plant was also built, and the equipment was used to produce road and concrete aggregates. By the early 1930's the demand for crushed stone began to rise, and at the present time over 60 percent of the output is comprised of that type of product.

However, as time went on, the demand for agstone also began to



Left: The drilling jumbo used by Franzefoss in its underground mining operation near Oslo, Norway.

Below: From the Franzefoss Bruk agstone mill (right) the finished product is conveyed to the 4,000-ton capacity storage silos (left) by screw conveyor and a bucket elevator. This plant is operated by one man (each shift) from a central control panel.

In this overall view of the Franzefoss Bruk A/S property, the agstone mill and storage silos are visible in the background (left). In the right foreground is the crushed stone plant.

increase, due to an improved agricultural economy; and when World War II started, the demand exceeded the supply. Production of crushed stone was limited as much as possible in order to produce greater quantities of agstone. In 1943 the whole agstone plant was rebuilt, a new feeding bin was installed, and several pieces of equipment were acquired from F. L. Smidth & Company A/S, at Copenhagen. These included a feeder, a Tirax mill, a high-pressure ventilator, a separator, and a cyclone.

Since waterfall and turbine power was not sufficient to meet the needs of the new plant, electric power was purchased from a utility, and the turbines were shut down. By 1946 it was evident that the 12-ton agstone storage capacity was inadequate—particularly during seasonal periods when the demand could not be met—and in that year two bins with a total capacity of 1,000 long tons were built. They were accompanied by the installation of F. L. Smidth screw conveyors, elevators, and packing machines. A continuing increase in the agstone market resulted in the erection of another storage bin—a structure of 3,000-ton capacity — in 1954. By this time three limestone spreaders had been acquired from the Highway Equipment Company of Cedar Rapids, Iowa, and within the next five years Franzefoss expects to have 20 spreaders in operation.

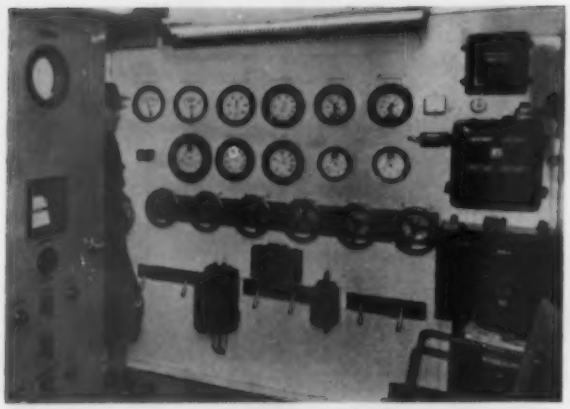
All of the higher grade limestone on the company's property has now been recovered, but an adjoining deposit has been acquired under contract for extraction underground by the room-and-pillar method. The limestone is a Cambro-Silurian sediment made up of the Upper Llandovian, Wenlokian, and Ludlowian formations. A jumbo drilling unit is employed for drilling blast holes, and explosive consumption is about 378 gr. per metric ton of stone.

A 19RB Ruston Bucyrus machine is used to load broken rock into a Scania Vabis truck, which hauls the material about 500 yards to the primary crusher. From the latter—a Svedala No. 4 unit—the rock is transported on a belt conveyor to a Svedala HM 2 hammermill. Material is reduced to minus 25 mm. and then transferred *via* belt conveyor and bucket elevator to a 75-ton storage bin from which it is fed to a Tirax mill.

Feed to the mill is controlled by an F. L. Smidth Folafon, or electric ear, on the mill. The latter, a 3.2-by 16-meter unit, has a 5 t.p.h. capacity, of which 7 percent is plus 170-mesh. Mill discharge is drawn to an air separator from which the coarser particles are recirculated to the mill. Finer sizes are carried in the circulating airstream to a cyclone. An oil-fired furnace provides heat for the circulating air to accomplish drying of the material in the flow. An F. L. Smidth double-chamber, electrically heated dust collector has been installed, and trapped material joins that from the cyclone for transport to the finished product storage. The entire plant flow is operated by one man, on each of the three shifts, from a single control room where air, temperature, and feed controls are mounted on a panel.

Finished material is transferred from the cyclone and dust collector by screw conveyor and a following bucket elevator to the three storage bins. These structures now provide a total capacity of 4,000 tons. From the bins, the milled agstone passes through an air gutter to a screw conveyor and then to a bucket elevator, which feeds the packing bins. The latter supply a Flux packing machine of 20 t.p.h. capacity in filling 50-kg., 4-ply paper bags. Bulk delivery is also supplied from these bins from a truck-loading point equipped with a weighing bridge.

Due to the fact that fluctuations in demand for agstone are still ex-

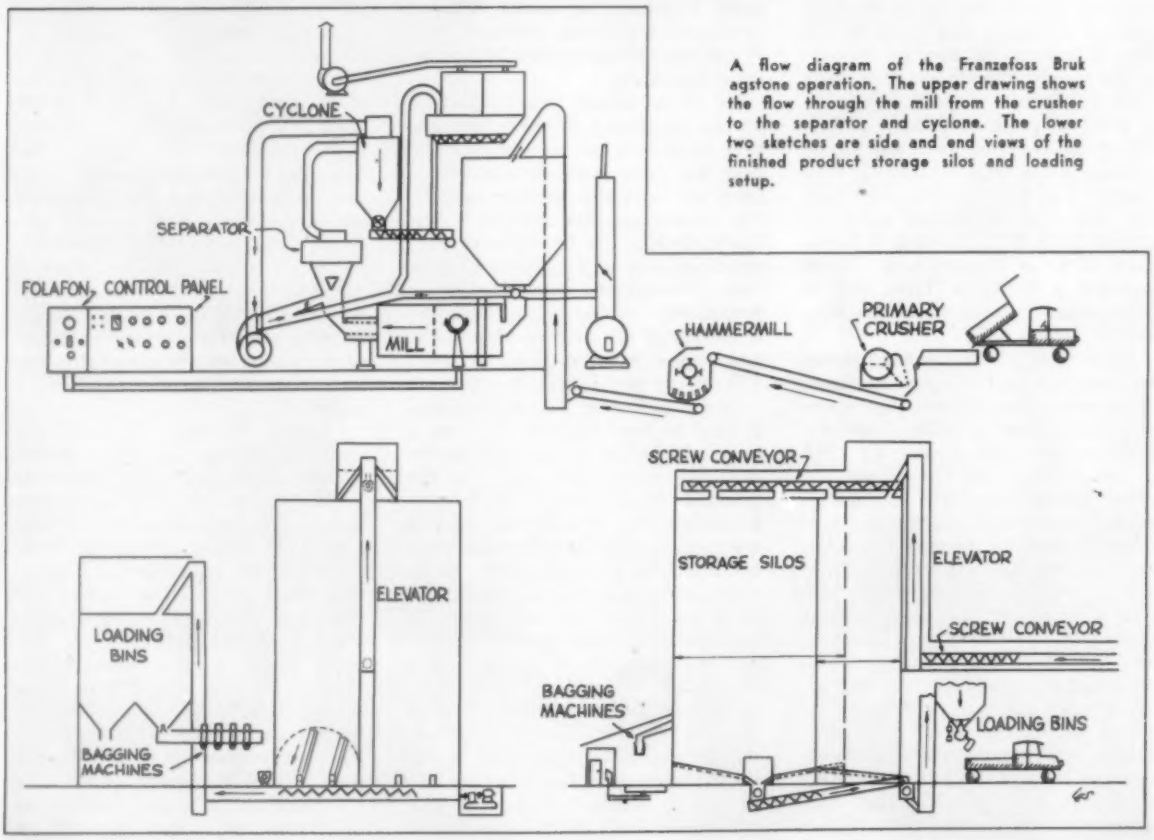


A view of the control room of the agstone mill from which one man can regulate the flow through the entire mill.

The structure on the right houses the bins for the crushed stone plant; on the left is the asphalt plant.

perienced, the Franzefoss organization has also turned to the market for ground dolomite in the glass manufacturing industry. They are thus able to keep the mill operating at its normal 30,000-ton annual capacity. In addition to the three men engaged in the three-shift operation of the plant's control room, the balance of the crew consists of seven men—two on drilling and blasting, two on loading and hauling, one at the primary crusher, and two in the bagging and loading operation.

The company is now headed by Sverre Markussen, president, who is one of the founder's sons. He joined the organization in 1933, when it was still a personal firm, and was appointed manager in 1936 after the firm had been incorporated. He was joined by another brother, Rolf, who is now sales manager, in 1945. Not only does the growth of this operation furnish evidence of the progressive attitude of these two men, but it is also indicated in the fact that they traveled several thousand miles to attend the meetings of the National Lime Association held in California last fall, in order to avail themselves of the latest information available in the lime and agstone industries.




A flow diagram of the Franzefoss Bruk agstone operation. The upper drawing shows the flow through the mill from the crusher to the separator and cyclone. The lower two sketches are side and end views of the finished product storage silos and loading setup.

## Casualty Losses

(*From page* 124)

estimated tax if the loss occurs subsequent to the third quarterly payment. If there is a carryback loss, an amended income tax return should be filed at this time for 1954 and, if need be, 1955. Early filing of amended returns for prior years may speed up tax refunds.

**Employ tax counsel.** A good many taxpayers ordinarily make their income tax returns without employing tax counsel. If a substantial casualty loss has been sustained, it cannot be urged too strongly that expert help be retained. The services of a reputable consultant will insure that the loss is reflected correctly in the income tax return and will reduce the likelihood of refund delay or challenge of the loss. Tax counselors are less pressed for time in January and can give a client's casualty loss problems more consideration than if this matter is delayed until around the tax filing deadline. Even before the year-end, and at the time a loss is sustained, counsel well may be sought to determine precisely what information will be necessary.

**Loss formulas** — It may not be amiss to give a hint as to the complexity of properly reflecting a casualty loss in an income tax return. Two distinct formulas are required, one for business losses and the other for non-business losses.

For non-business property the loss is the digerence between the fair market value immediately before the casualty and the fair market value immediately thereafter, but limited to the *cost* of the damaged property.

For business property several related factors enter into a determination of the deductible loss allowable for tax purposes. The loss is first determined by the difference in the fair market value before and after the casualty. This establishes the percentage of the loss, based on the fair market value before the casualty. This percentage must then be applied to the adjusted basis of the property to establish the deductible loss. The adjusted basis is the cost less depreciation allowed or allowable.

The foregoing over-simplified explanation of the respective formulas suggests the wisdom of employing expert counsel if the loss—and the possible tax saving—is substantial.

## Silica Sand Corp.

(*From page* 131)

is transferred, by belt conveyor and a 70-ft. Jeffrey bucket elevator, to a battery of three 3- by 10-ft. double deck tandem Tyler Hum-mers mounted above the four smaller silos. Each screen is fitted with 40-mesh cloth on one of the two decks and 50-mesh cloth on the other. The three products of these screens (including throughs) are piped to three of the four 14- by 35-ft. 250-ton silos as plaster, foundry, and glass sand.

From a 100-ton compartment in the upper part of the 1,000-ton finished-product silo, the sand goes through a 10-in. pipe to a Universal 5-spout bagging machine of the volume type or to a bulk-loading point above the plant railroad siding. A Stephens-Adamson sand slinger is also available for bulk loading. Finished products are reclaimed from the other four storage silos by an 18-in. by 35-ft. belt conveyor, joined at right angles by a similar conveyor that supplies a 50-ft. bucket elevator. The latter in turn supplies feed pipes to the bagger or bulk-loading point. A Union Specialty machine is used to sew the filled multi-wall paper or burlap bags, which are then transported from the bagging room into boxcars on the adjacent siding by a Rapistan belt conveyor. This unit consists of a fixed length and an extendable section.

Bagging room, warehouse, laboratory, and office are housed in a Butler prefabricated steel building which also has fiber glass insulation. Dust collection in the main plant building is handled by a Day 36-in. size 50CW fan and 72-in. cyclone. Most of the processing equipment is enclosed and vented to the dust collection system.

With a productive capacity of about 750 t.p.d., the plant is operated 24 hours a day. A crew of 16 men, including the foreman, are employed in 3-shift operation of the screening process, 2-shift operation of the dryer, and one shift in bagging and loading.

Under the direction of a progressive board of directors, this new company has had a healthy growth. The growth is continuing in the expanded facilities being installed to accommodate increased production of glass and foundry sands. The organization is also fortunate in having a couple of "old hands" in the silica sand field —A. D. Bryant, general manager, and Ray Bennington, superintendent, who have had many years of experience in Illinois silica sand operations.

## Hennigan, Lothrop, Henning Promoted by Universal Atlas

Three appointments to new positions in the manufacturing, operating, and engineering divisions of the Universal Atlas Cement Company, New York, N. Y., were recently announced.

Francis A. Hennigan was appointed assistant to the vice-president, manufacturing, in New York. Mr. Hennigan was formerly plant manager of the Hannibal, Mo., operation.

Mike M. Henning, assistant plant manager at Hannibal, succeeds Mr. Hennigan as plant manager.

Arthur P. Lothrop, formerly assistant to the vice-president, manufacturing, was named appropriations control engineer.

Mr. Hennigan has been associated with Universal Atlas since 1936, when he was appointed chief industrial engineer at the Buffington, Ind., plant. He was transferred to New York in the same capacity in 1939. In 1947 he was appointed assistant to the vice-president, operations, and in 1949 became plant manager at Hannibal.

Mr. Henning joined Universal Atlas in 1942 as industrial engineer, and went to Leeds, Ala., as plant engineer in 1944. In 1947 he was made assistant plant manager at Leeds. Two years later he was transferred to New York to serve as assistant to the vice-president, manufacturing.

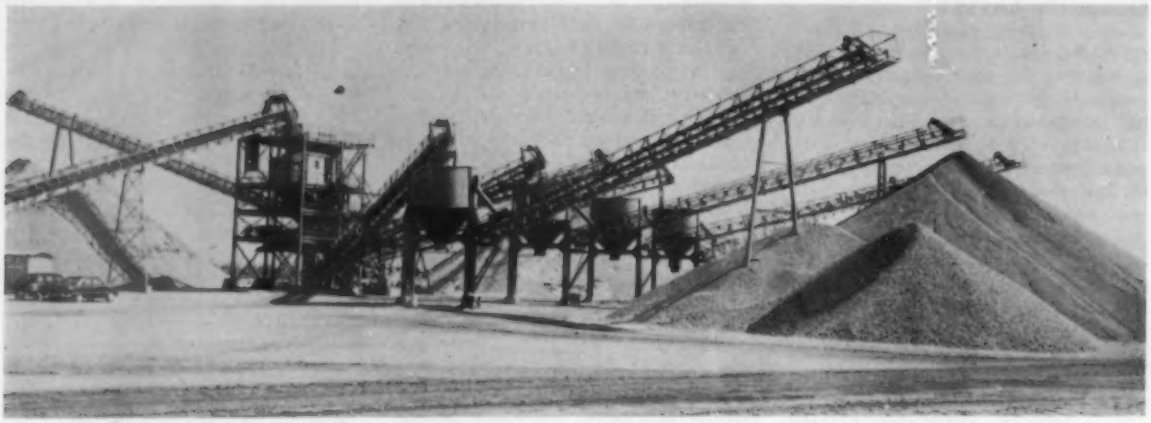
## '55 Perlite Sales Set Record, Increase Expected in 1956

Production estimates made by Perlite Institute, the industry's trade association, show a total of 280,000 short tons of crude perlite mined and marketed by U. S. producers in 1955, with an estimated value of $2,280,000. These statistics represent an increase of about 27 percent over the 1954 production of 219,703 tons reported by the U. S. Bureau of Mines.

Production of expanded perlite also hit an all-time high of about 220,000 short tons in 1955. Cash value of the expanded material is estimated at $11,660,000. In 1954 the Bureau of Mines reported 195,499 tons.

The difference in tonnage between crude and expanded perlite is attributed to exports of the crude, tonnage in stock or in transit, and sales of crude perlite to manufacturers who expand the material and incorporate it in a finished product.

Perlite industry spokesmen anticipate another substantial increase in sales, probably ranging between 12 percent and 15 percent, in 1956. Much of the increase is expected to accrue from greater production of plaster aggregate, which consumes close to 80 percent of all expanded perlite; concrete aggregate; and filter aids.



The screening tower, storage piles, and truck-loading bins at the new Lytle Creek plant of Service Rock Corporation, Compton, Calif.

# Owl Rock Products

## Completes First Stage of Extensive Expansion

### primary crushing, screening and washing facilities installed for 600-t.p.h. plant

By HARRY F. UTLEY

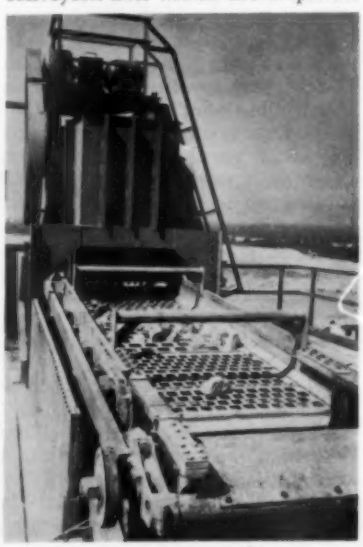
Another ON THE SPOT Report

OWL Rock Products Company, Compton, Calif., is currently engaged in an impressive expansion and plant construction program involving its aggregate-producing facilities.

Production activity at its main plant in the San Gabriel Valley, east of Los Angeles, is being discontinued this spring, due to the approaching depletion of the deposit which the company has worked for many years; and a modern, high-capacity processing plant will shortly be erected on a newly-acquired site and deposit about a mile east of the former plant. The new facility will have a designed capacity of 700 t.p.h. The pit will be developed and worked on two levels, with rail-mounted primary crushers serving each level.

Following Owl's acquisition last year of Service Rock Corporation, which has producing sand-and-gravel plants at Colton and Riverside, the concern recently completed the erection of the principal unit of a new 600-t.p.h. sand, gravel and crushed-rock plant at Lytle Creek, immediately west of San Bernardino. Primary-crushing, screening, and washing facilities went into operation shortly before the first of the year, and the necessary crushers and appurtenant equipment are now being installed at Lytle Creek to round out the plant's ability to produce any type of specification aggregates which may be required.

The Lytle Creek plant is of all-steel construction and was designed for economical, automatic, straight-line production. Equipment is push-button-controlled and interlocked from a central station in the screening tower; and, except for operations in the pit, two or three men can handle the entire plant. The economies and advantages of modern belt-conveyor handling have been fully utilized. When completed, the plant will utilize more than 2,000 ft. of conveyors. Belt widths are ample for



Left: A view of the primary crusher installation, with the conveyor leading to the screening plant (foreground).

Right: The scalping screen at the top of the plant.

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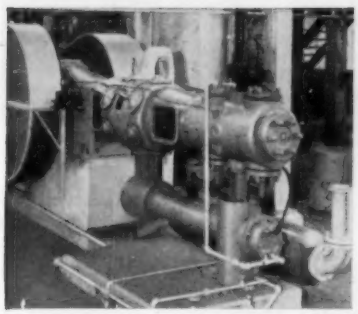
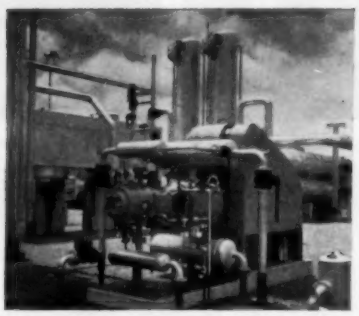
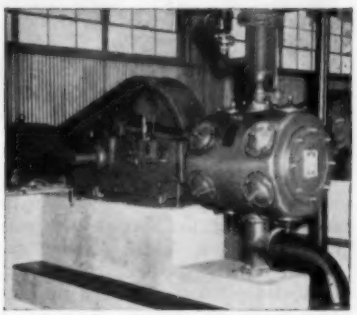


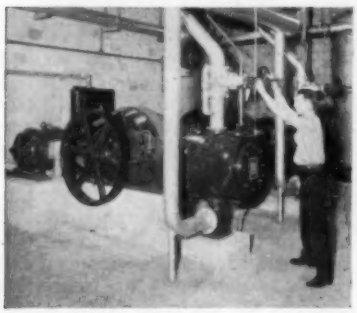
**SOOT BLOWING** The steam power plant of a large paper mill uses this ES to furnish high pressure air for boiler-tube soot blowing. This V-belt driven 125-hp unit compresses air to 350 psi in two-stages.



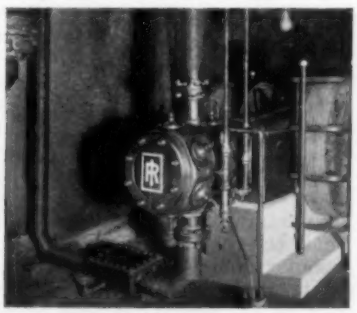
**PROCESS GAS COMPRESSION** In this unique outdoor installation, a two-stage ES compressor with V-belt drive compresses still vapors in a large modern gasoline plant.



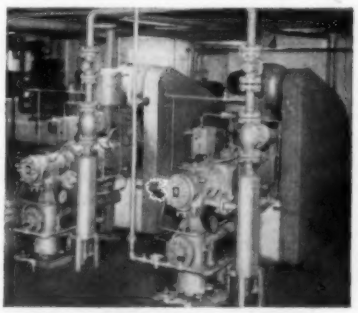
**AIR LIFT SERVICE** Shown here are two of the three Ingersoll-Rand ES compressors installed in a copper mine to provide pressure for elevating acid from the bleaching tanks by the air-lift principle.



**GLASS MOLDING** Here in a large lamp manufacturing plant, two ES compressors supply 50-psi air for cooling gas furnaces and for high pressure gas jets used in glass molding. Pressure is reduced to 30 psi to drive air-motor driven agitators.



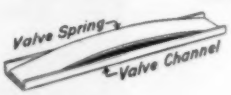
**BOOSTER SERVICE** Installed on the 4600 ft level of a large mine, this Ingersoll-Rand ES compressor boosts air pressure to get full power out of rock drills and other air-powered equipment.



**AIR STARTING SERVICE** A large transcontinental pipeline station uses these two ES compressors to supply 250-psi starting air to its I-R gas engine compressors. Both have overhead motors and one unit is provided with a standby gasoline engine.

SHOWN here are just a few of the countless ways in which Ingersoll-Rand heavy-duty ES compressors are serving industry. A wide range of standard cylinder arrangements and types of drive enables them to meet virtually any operating conditions within their size and capacity limits. Their efficiency is high and operating and maintenance costs low. Ask your I-R representative for help in solving any compression problem.

### Only I-R compressors have CHANNEL VALVES

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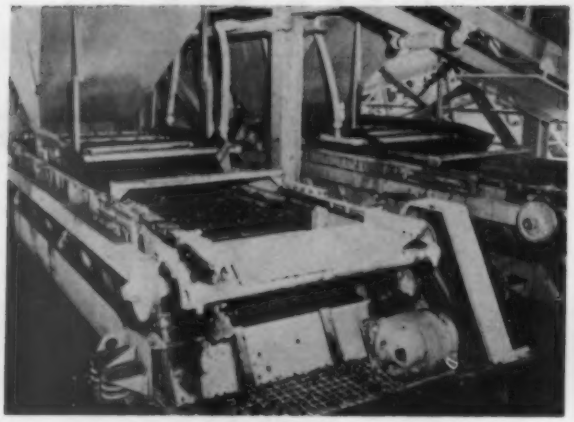
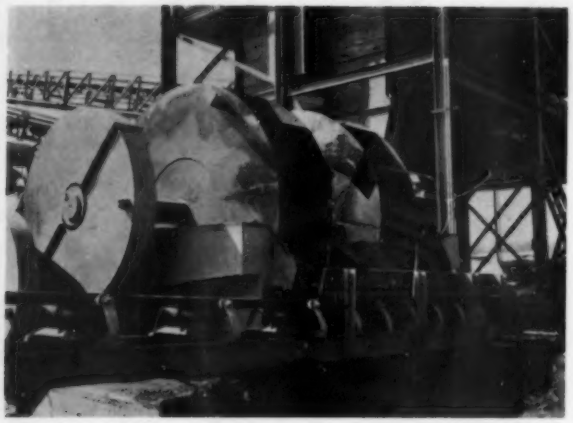


Fine gravel is washed and sized by this pair of horizontal screens.



The dual sand wheel processes minus 4-mesh concrete sand.

handling the large tonnages, ranging from 48-in. on the hopper-to-primary crusher run, to 24-in. on the individual stackers.

Euclid pit trucks, loaded by Lima and Koehring shovels, discharge to a hopper at the pit-dump station, where a Conveyco 402-in. by 8-ft. dual feeder puts the pit-run on the conveyor leading to a Cedarapids 32- by 40-in. jaw crusher, set to break the boulders to minus 4 in. The feeder is controlled from the primary crusher station. The product is carried by a 6-in. wide belt up to the screening building.

A Symons 4- by 12-ft. screen at the top of the screening structure scalps the oversize, normally plus 2½-in. This portion of product will be reduced in size by the crushing section of the plant now being installed, which involves, principally, a battery of three Symons cone crushers.

Following the scalper, a Symons 4- by 8-ft. rod-deck screen takes out the sand, disposing of any surplus not desired for washing and classifying, into a separate pile, *via* belt-conveyor, on the waste side of the plant.

The scalper and rod-deck screens operate dry, while two Allis-Chalmers 4- by 12-ft. Ripl-Flo and two Symons 4- by 12-ft. horizontally-mounted screens, which follow in flow sequence, are fitted with washing sprays to clean and classify the finished gravel. Three sizes are being made initially—2½- to 1½-in.; 1½- to ¾-in.; and ¾- to No. 4, the latter being recombined from ¾- to ⅜-in. and ⅜- to No. 4 screen products.

Finished gravels are carried radially by four belt conveyors, ranging in length from 95 to 120 ft., to load four steel truck-loading bins. These bins each have a capacity of 150 tons; and when they are full, the surplus is diverted by chutes to additional belt-conveyors which build up separate ground-storage piles.

The minus 4-mesh sand is processed by a Conveyco dual sand wheel and is carried to storage by a radial conveyor which stocks a drainage pile of 7,500 ton total capacity.

Conveyor belting, supplied by Raybestos-Manhattan, embodies a nylon-rayon fabric and rides on Conveyco rolls and idlers. All drives of 20 hp. or over are transmitted *via* Twin Disc fluid couplings.

Dewey H. Burden is president of Owl Rock Products Company. The Lytle Creek plant was designed under Mr. Burden's guidance by the engineering staff of the Conveyor Company, Los Angeles.

## National Fire Prevention Assn. Holds 60th Meeting in Boston

Sixty years of fighting fires with engineering and public education were marked at the National Fire Protection Association's sixtieth annual meeting held in Boston June 4-8.

The international fire safety group, founded in 1896, is the source of most of the nation's fire protection standards, suggested ordinances, and codes. In addition, the association sponsors the principal North American fire safety campaigns.

All aspects of fire prevention and fire protection were treated in a series of 12 sessions.

Left: All controls are operated by push-buttons, centralized on this panel in the screening tower.

Right: One of the company's truck-trailers being loaded at the bins.

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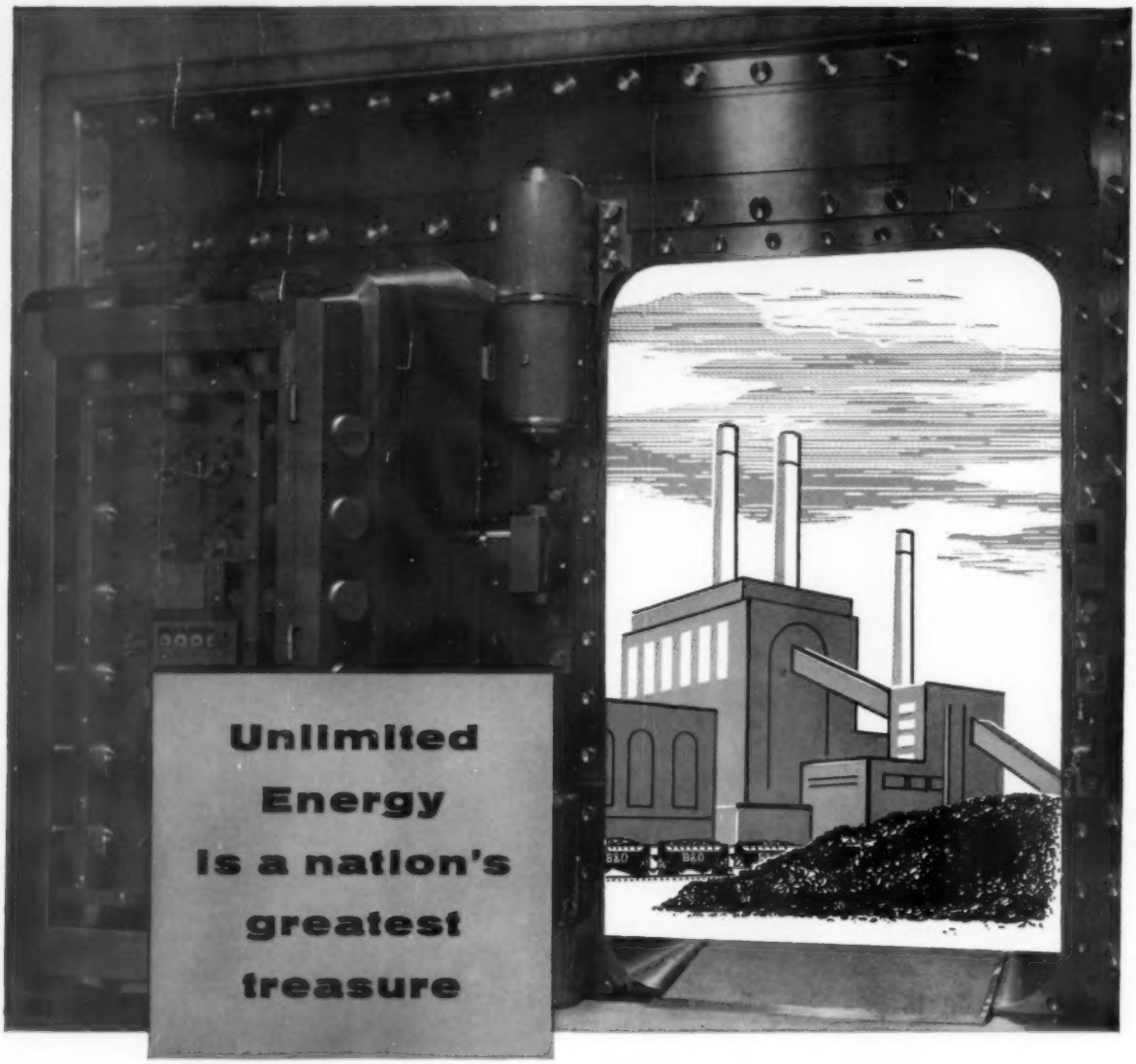


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# Southeastern States Gain In Mineral Output in 1955

**North Carolina**—The total value of North Carolina's mineral production for 1955 is estimated at $43,480,000 or 11 percent greater than in 1954, according to the U. S. Bureau of Mines.

The figures for 1955, however, are *estimates*, based on data available at publication time, including estimates of producers and trends over preceding years, as represented by records of previous production—national, state-wide or individual mine production by commodities.

Production of gold, silver, copper, and lead ore is reported as paralleling that of 1954, except for a small increase in gold recovery.

Production of tungsten concentrate (60 percent $WO_3$ basis) increased roughly 3 percent above 1954 in tonnage and carried an appreciably higher $WO_3$ content. As a result another new high in total value was recorded.

Mineral aggregates—stone, sand and gravel—again lead all other mineral commodities in total value, which was $22,900,000. Stone showed a 9 percent increase in tonnage (11,000,000 short tons) and value and reached an all-time high of $17,000.000. Sand and gravel reached a total output of 6,620,000 tons, valued at $5,900,000.

On the other-hand, reports from the sand and gravel industry indicate a loss of 11 percent in tonnage but a 7 percent gain in total value over 1954.

Reports from producers, who accounted for a little more than 50 percent of the 1954 production of claps, indicate that tonnage of miscellaneous clays increased less than 5 percent—to 1,951,000 short tons—and actually dropped 20 percent in total value. Kaolin production, however, was indicated as increasing roughly 25 percent in both tonnage and value.

The feldspar industry is credited with a nominal 10 percent increase in tonnage—253,000 long tons—but indications from an appreciable percentage of 1954 producers were that total value for 1955 would be roughly 13 percent above 1954.

Reports from producers of nearly one-half the scrap mica production of 1954 indicate an increase of 36 percent in tonnage of that commodity, total value increasing more than 50 percent above 1954.

Reports from individual producers, supplemented from information from the General Services Administration mica buying station at Spruce Pine, appear to warrant an increase for sheet mica of 70 percent in total value but a loss in tonnage because a higher grade of ore was being marketed.

Producers of 70 percent of the 1954 production of talc and pyrophyllite reported an increase in tonnage of 17 percent (123,000 short tons) and 28 percent in total value ($450,000).

Of the minor nonmetals, asbestos production registered a substantial decrease in both quantity and value; beryllium concentrate also dropped in both tonnage and value. Indications represented olivine production as increasing 8 percent in tonnage and 25 percent in total value above 1954. Vermiculite lost 56 percent in quantity and value.

**South Carolina**—The over-all value of mineral production in South Carolina in 1955 is estimated at $18,556,000 (an all-time high), compared with $17,744,000 in 1954 (the previous high), or a gain of 5 percent. These figures are also estimated.

There was no production of metals or metallic ores in the state reported in 1955. Of the nonmetallics, cement headed the list, with a gain of 10 percent in tonnage and 12 percent in total value, as compared with 1954.

Reports from clay producers indicate that total production for 1955 was below that for 1954 by 15 percent, but total value declined only one percent.

Crushed stone production increased 9 percent in tonnage to 3,100,000 short tons, and 12 percent in total value, $4,400,000, according to reports from producers who accounted for over 75 percent of the 1954 production.

Producers of sand and gravel, who were responsible for 65 percent of the state's 1954 production, indicated that the 1955 production would be 34 percent below 1954 in tonnage—approximately 1,864,000 short tons—and 10 percent below in total value—about $2,300,000.

Of the minor nonmetals, producers of barite indicated an increase of 12 percent in tonnage and value as compared to 1954. Kyanite production did not change materially in tonnage or value from the previous year. Mica, however, more than doubled in both quantity produced and value of product. Vermiculite registered an indicated gain of 8 percent in tonnage and 7 percent in total value.

**Georgia**—The value of mineral production in Georgia in 1955 was $58,610,000, an increase of 5 percent above the $55,690,472 recorded in 1954. Higher production values of clay and stone, the two principal mineral commodities, together with gains by barite, bauxite, and feldspar, accounted for the increase; but these were partially offset by some decreases in the value of cement, iron ore, lime, and mica.

Stone production increased from 7,996,737 tons, valued at $21,310,419, in 1954 to 8,627,000 tons, valued at $22,730,000, increases of 8 percent and 7 percent, respectively, in tonnage and value.

Total clay production was 2,639,000 tons, valued at $25,196,000, an increase of 5 percent in value although the tonnage was 3 percent lower than in 1954. Fuller's earth production was down slightly, while kaolin production and value increased 7 percent. Miscellaneous clay output was 9 percent less than in 1954, but its value was 20 percent higher.

Sand and gravel (27,000,000 short tons, valued at $2,500,000), slate, and talc production are estimated to be very close to the 1954 output, but cement was down 3 percent, iron ore 8 percent, and mica 4 percent from 1954.

Feldspar has assumed an important position in the state's mineral production. The new mill of Appalachian Minerals Corporation, Georgia's only lime producer, was idle most of the year, but it is reported to have reopened under new management. Sheet mica production remained approximately the same as in 1954, but scrap and flake mica was 8 percent lower and beryl declined sharply from the previous year's large production.

**Alabama**—The value of mineral production in Alabama in 1955 was $166,500,000, compared to $146,105,000 in 1954. This represents an increase of 14 percent above 1954, and establishes a new record for the state, exceeding 1953, the previous record year, by 5 percent.

Shipments of iron ore increased 23 percent over 1954. Production of red ore from the mines near Birmingham increased 31 percent, but

production of brown ore declined 12 percent.

Bauxite production increased 62 percent, due to increased demand for bauxite in refractories. Cement shipments increased to 12,000,000 barrels, valued at $30,800,000, for a new annual record. Clay production decreased about 10 percent. Lime production decreased slightly, but value rose. Mica production was about the same as in 1954.

Sand and gravel production increased about 20 percent, to 4,800,000 short tons, valued at $4,000,000. This reflects increased construction activity. Stone production decreased about 5 percent, to 7,000,000 tons, valued at $6,900,000. Salt production from brine was steady at the same rate.

Coal production increased 18 percent above 1954. Production of natural gas and petroleum was about the same as in 1954.

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General Refractories disclosed that sales for 1955 amounted to $56,536,641, as compared with $37,436,338 in 1954. Net earnings totaled $6,011,516 for 1955, or $4.87 per share, as compared with 1954 figures of $2,806,706 and $2.27. Net working capital at the close of the year amounted to $19,134,567, against $17,155,587 at the end of 1954.

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# Legal Decisions


**By LEO T. PARKER**
Attorney at Law
Cincinnati, Ohio


During the past few months the writer has received quite a few letters from readers of PIT AND QUARRY asking about the kind of testimony and evidence which the government must introduce in order to convict a taxpayer of income tax evasion. I was successful, after expending considerable time and effort, in locating a late and leading higher court decision which explains all important phases of the law on this subject. Knowledge of the cause and outcome of this new income tax decision will assist readers in conducting their business in a manner designed to avoid future controversies and convictions of income tax evasion. Obviously, readers and their lawyers may advantageously cite and use the hereinafter new decisions.

### Don't Be Deceptive

A review of late and leading higher court decisions discloses that in many instances taxpayers intentionally omit listing certain expenses thinking that, in the event their income tax returns are audited, the government agents will overlook an apparent unintentional failure to list sources of income. This is bad business, and the internal revenue agents cannot be fooled by this procedure. Furthermore, several standard methods of arriving at the net income of a taxpayer are utilized by government agents and approved by the higher courts.

In *Clark v. United States,* 211 Fed. (2d) 100, the testimony showed facts as follows: A man named Clark was convicted of attempted income tax evasion for the years 1945 to 1949 inclusive, through the filing of false and fraudulent returns. The government alleged that he had misstated his net income for 1945, as being $3,437.92, whereas it was $46,808.98; for 1946, as being $5,423.24, whereas it was $30,267.19; for 1947, as being $6,998.34, whereas it was $12,822.31; for 1948, as being $6,178.14, whereas it was $23,239.96; and for 1949, as being $9,381.67, whereas it was $25,236.69. All of Clark's income was admittedly derived from his business.

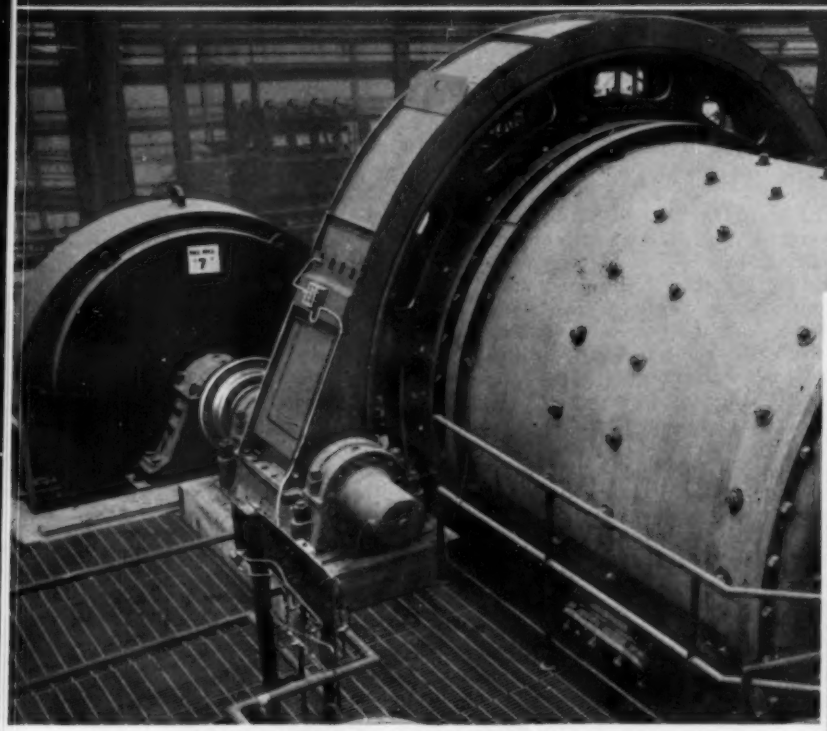
During the trial the testimony showed that in arriving at the discovery of income tax evasion, the government agents first took into consideration the gross receipts of the business. From this amount was subtracted the cost of goods sold, that is, the materials Clark purchased for sale. Next other business deductions were subtracted, consisting of salaries, interest, taxes, depreciation, rent, and all the other items which Clark had claimed as business expenditures in his returns. The amount remaining was treated as Clark's adjusted gross income. From this amount subtraction was made of the standard deduction for non-business expenses which Clark had used in his returns to arrive at his net income.

Clark appealed to the higher court, claiming that the government had improperly taken his gross receipts as the foundation of its computation, and that gross receipts cannot be the basis of income tax liability, because they included reimbursements of outlays made by him on behalf of customers for cemetery lots, extra motor trucks hired from outside sources, newspaper notices, entertainment of customers, etc., which were not part of the services or expenses covered by his general income.

Also, Clark argued that while he had included some of these expenses in his income tax returns as operating expenses, the government agents had not audited his books to find many other such expenses that he had failed to include in his income tax returns. In other words, Clark claimed that he had omitted listing numerous items of expense at the same time he may have overlooked listing certain income and he declared that if the government agents had properly audited his books, they would have found that the total of omitted expenses balanced the total of omitted sources of income. Nevertheless, the higher court upheld the lower court's conviction, and said:

"The government is not required to establish income tax evasion by the same processes and formalities which a taxpayer is required to observe in making his return. And it is not necessary, in order to make a case of tax evasion, that the exact amount of such income should be established. If the taxpayer legally

HELICAL GEARING BY **FALK** ... FOR MILLS AND KILNS



# Falk Gears are *the Most Efficient* you can buy...

## *and are the most economical in the long run!*

These are broad claims—but they have been proved beyond question by countless laboratory tests and confirmed by the actual experience of leading mill and kiln operators and engineers.

Falk ring gears transfer the gear tooth load directly to the shell flange of mill or kiln. They are correctly designed and of rugged proportions for maximum rigidity and accuracy. These helical gears—with extra-depth, extra-capacity teeth—provide a single-mesh, high reduction ratio drive giving you these advantages:

- Gear efficiency of 98+% (see column at right)
- High motor speeds—hence saving in motor and power costs
- Smooth helical gear action
- Maximum resistance against abrasive wear
- Longer service life of gears and of driving and driven machinery

This all adds up to the highest efficiency and greatest over-all economy. Don't compromise with quality on your gearing. *Insist upon Helical Gears by FALK*—the country's pioneer and leading supplier of precision gearing.

Consult any Falk representative—also, write for **Engineering Report 6170,** "Advantages of Helical Gearing."

**THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WISCONSIN**

### GEAR EFFICIENCY PROVED BY SPECIAL LABORATORY TESTS

In the Falk Mechanical Test Laboratory, continual full-load tests of helical gears and gear units are conducted to provide accurate data on gear efficiency. Load efficiency, speed, lubrication and capacity tests are made.

The above photo shows the use of special testing equipment to obtain data on mechanical efficiencies of Falk helical gears. Tooth pressures corresponding to rated capacity and speed are applied through a loading device equipped with strain gages for accurate load measurement. Power losses are determined by an accurately calibrated torque meter on the connecting shaft of the motor.

Test data show the average tooth-mesh loss for a single-reduction set of Falk Helical Gears is *less than* 1½% of the rated capacity. Thus, the efficiency of the gears is 98½% *or greater*—proof that Falk Helical Gearing is the most efficient obtainable.

**FALK**

...a good name in industry

has other deductions than these which he has so claimed, it is his privilege to show them. Sometimes the failure to claim deductions in a return may well be a part of the taxpayer's scheme to cover up his unreported income as a matter of not creating suspicion on the face of his return."

For comparison, see *Gar v. United States,* 220 Fed. Rep. (2d) 252. The higher court affirmed the lower court's conviction of one Gar for income tax evasion. He was sentenced to four years' imprisonment and fined $10,000. This decision was rendered only last month, although Gar's income tax returns were not signed by him, but were prepared by a professional tax service company. The higher court answered the following questions in the affirmative: (1) Is a taxpayer subject to prosecution where a professional tax consultant files his income tax return? (2) If the taxpayer does not sign his income tax return, can he be prosecuted by the government for a fraudulent return? (3) Can the government prosecute a taxpayer after a lapse of more than 5 years after his income tax return has been filed?

With respect to acts which constitute fraud, the court explained that grounds for conviction of a taxpayer for income tax evasion is any evidence from which "willful attempt" may be inferred, such as keeping a double set of books; making false entries or alterations; false invoices or documents; destruction of books or records; concealment of assets or sources of income; handling one's affairs to avoid making the records in transactions of that kind; and any other conduct which would tend to mislead or conceal true income.

This higher court also held that if a taxpayer fails to keep accurate books or any books, his income deficiency may be determined by the simple method of subtracting from his present "worth" or assets the total amount of his assets when the investigation of his income tax evasion was begun.

### Cement Dust Is Nuisance

According to a late higher court decision, falling cement dust is a nuisance, and a cement manufacturer is liable for reasonable damages to nearby home and property owners. However, the court will not award *excessive* damages.

For example, in *Riblet v. Portland Cement Company,* 274 Pac. (2) 574, the testimony showed that a property owner named Riblet sued the Portland Cement Company for several thousand dollars damages for inconvenience and depreciation in rental or use value of his property in consequence of falling cement dust during a two-year period. Riblet had witnesses to testify that the cost of cleaning up the loose dust would be $10,000. Also, Riblet contended that he was entitled to recover $25,000 as the cost of removal of the cement dust which had become permanently encrusted on his property during the two-year period. Further testimony proved that cement dust on tables, chairs, automobiles, etc., was an annoyance. Sludge on the bottom of Riblet's swimming pool made it impossible to walk in the pool.

The higher court decided that the falling dust was a nuisance, and that Riblet was entitled to only $1,000 damages for the inconvenience and discomfort caused by the dust and cost of cleaning. The court said:

"We are convinced that the trial court erred in finding that there was insufficient evidence on which an award for damages for personal discomfort and annoyance could be based. Although the fall of cement dust usually was imperceptible, not being detected by sight, smell, or sound, as is usually the case when nuisance involves dust, gas, smoke, noise, etc., its effects soon became apparent to the physical senses. Admittedly, no one testified to damages in consequence of personal discomfort and annoyance in terms of dollars and cents, but the fact that no one has placed a monetary value on personal discomfort and annoyance does not make the damage speculative or conjectural."

### No Rentals for Containers

According to a late higher court decision, a purchaser of materials is not required to pay rental for containers unless the testimony clearly proves that the original contract between the seller and the purchaser provided for rent payment instead of mere deposits.

See *Huron Company v. Fuelgas Company,* 64 N. W. (2d) 666, in which the testimony showed that a buyer and seller entered into a written contract which contained a clause: "All containers shall remain the property of the company (seller), and the distributor (purchaser) shall account for and return to the company as promptly as possible all such containers including those in custody of distributor's customers.

A charge was made for each container when shipped to the purchaser. A law suit resulted when the seller contended that it had a right to charge the purchaser rental for use of the containers. The higher court held that all deposits on containers must be returned when the purchaser returns the containers.

### $13,500 Compensation Allowed

Last week I received an interesting letter from a reader as follows: "I have been reading your legal reports in PIT AND QUARRY on the large damage allowances made by the courts to dependents of employees where the suit alleges that the employer was negligent and the suit was for damages, instead of . . . compensation specified by the State Workmen's Compensation Act. Please state whether or not the courts hold that employees or their dependents may receive any such large amount of compensation under the state laws when the employee was killed or injured through his own carelessness."

Yes, under certain circumstances. For illustration, in *Botts-Hulme & Odell Cement Company v. Tate,* 265 Pac. (2d) 709, the testimony proved that one Tate was employed in a cement plant of the Botts-Hulme & Odell Cement Company. He was in a hole or shaft working on an electric pump. He and his brother worked on the pump in the morning until approximately 10:30. The brother left the shaft, and when he returned a few minutes later he found Tate lying on the shaft floor. All attempts to revive him were unsuccessful. The bottom of the shaft or floor was covered with water. The pump was operated by a connection from an electric motor, and this connection was faulty. Tate knew that the connection was faulty, but his employer did not.

In subsequent litigation the higher court held that Tate's parents, who were only partially dependent on him, were entitled to recover the sum of $13,500 under the State Workmen's Compensation Act. The court said:

"Where death is caused by an accidental injury sustained by an employee while engaged in a hazardous employment and arising out of and in the course of his employment, his dependents are entitled to recover compensation in the sum of $13,500."

### Adult Takes Title

Much discussion has arisen over the legal question: If a seller knows that a minor will have use of merchandise, can the seller avoid responsibility by selling the merchandise to an adult who takes legal title?

According to a late higher court decision, the answer is yes; but the minor can rescind the purchase contract.

For example, in *Wooldridge v. Hill,* 114 N. E. (2) 646, the testimony showed that an employer of a

**STRIP ACT AT ONLY 1200 RPM:** To join new and old bridge structures on the $8,527,000 Spring-Sandusky Interchange, at Columbus, Ohio, required demolition of the existing deck. Seven air tools (3 medium sinkers, 3 heavy duty breakers and a heavy chipping hammer) were supplied by a Jaeger "600" Rotary which never ran faster than 1200 rpm. Visintine & Company, contractors.

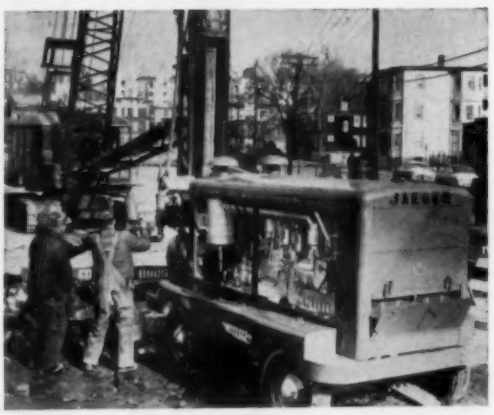
**IDLING AT ONLY 900 RPM,** on this road job, the Jaeger "600" Rotary is operating these four Thor "75" rock drills at 100 lbs. pressure. Under all ordinary conditions the same compressor will hold full pressure in two heavy duty wagon drills while operating well below its full load speed of 1650 rpm. "It's a windjamming sonofagun" says John Newman, Orco Construction president, Kirkwood, Mo.

# Why air costs you less with a Jaeger Roto®

Full load speed of other "600" rotary compressors is as high as 1800 rpm. Full load speed of the Jaeger Rotary is 1650 rpm, using the same economical GM 6-71 diesel engine. This difference means that, for the lengthened life of your compressor, you will produce air with less fuel, with fewer feet of engine piston travel and up to 150 fewer compressor revolutions per minute.

Further improvement in efficiency results from Jaeger's closer regulation of engine and compressor to air demands. Speed modulation over the entire range is smooth and stepless, and so instantaneous as to prevent any over-run and racing of engine.

Jaeger "125" and "365" Roto Air Plus units offer comparably superior performance. For complete details, see your Jaeger distributor or send for Catalog JCR-5.



**SMOOTH AS STEAM, AT A FUEL-SAVING 1200 RPM:** A Jaeger "600" Rotary and Vulcan #1 hammer teamed up to drive 14", 80# H-beam piling to approximate 100' depth on Massachusetts' Northeast Expressway, at Chelsa. Never running faster than a fuel-saving, compressor-saving 1200 rpm, the compressor maintained a hammer speed of 60 blows per minute with average penetration of 1" per blow. Coleman Brothers, Corp., contractors.

50th year JAEGER CONSTRUCTION EQUIPMENT

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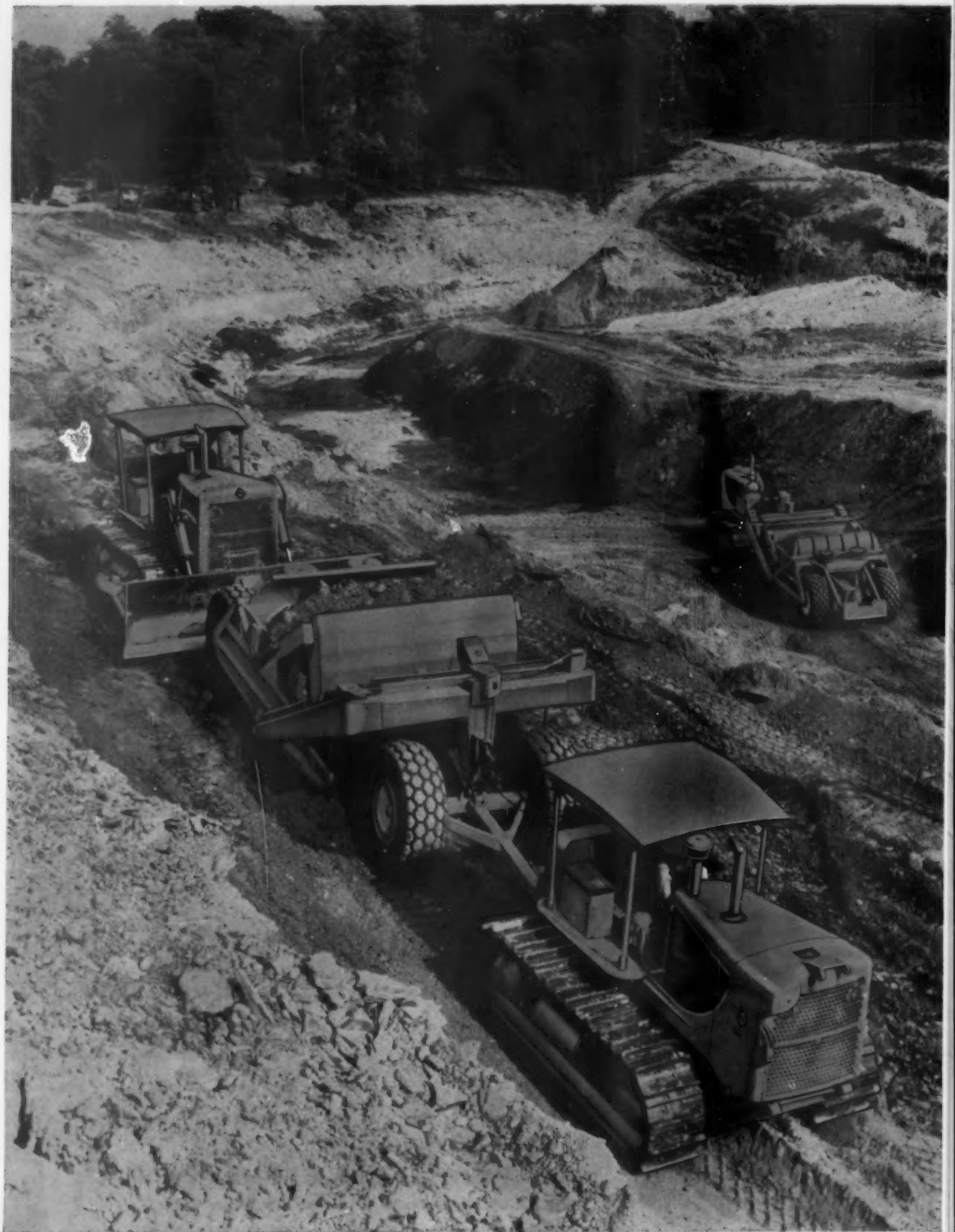


Allis-Chalmers HD-21 Tractor; 204 net engine hp; 44,000 lb. • Allis-Chalmers 315 scraper; 15 cu yd struck, 20 cu yd heaped.

This Allis-Chalmers HD-21 is general handy man at the Furr Coal Company's mine. It builds and maintains incline ramps between cut and fill areas to provide short haul cycles. With rear-mounted ripper, it loosens overburden when necessary to insure continued, fast loading. It also acts as a stand-by pusher.

Two Allis-Chalmers HD-21 tractors and pull-type scrapers strip overburden, carry it down an incline and spread it in a worked-out section of the mine and return empty up another ramp. By this method, the Furr Coal Company reclaims land without rehandling material. Savings amount to 8¢ a ton or roughly $1.50 for every scraper load.

# You can strip overburden and reclaim land *in One Operation*

## with Allis-Chalmers crawler tractors and pull-type scrapers

Whether you are stripping iron, coal, clay or quarry stone, you are probably faced with the problem of reclaiming the worked-out land. This is where mobility of Allis-Chalmers tractors and pull-type scrapers is of real value. With this equipment, you can strip overburden from new deposits, then haul and spread it immediately in a worked-out section of the mine.

A typical example is The Furr Coal Company, Nelsonville, Ohio. On this operation, HD-21 tractors and Allis-Chalmers pull-type scrapers save an estimated cost of 8¢ a ton by eliminating a second handling of overburden. Overburden consists of earth and clay with very little rock. The big HD-21's have the power to load these 20-yd. scrapers—usually without a pusher—and the speed to complete the cycle quickly.

"I've owned other makes of tractors and scrapers," says Mr. Furr, "and I have these because I believe them to be the best." Mr. Furr likes the Allis-Chalmers diesel engine, the construction of the tractor and the fact that it has proven torque converter drive. He also estimates that its thousand-hour lubricating intervals save about 30 minutes' servicing time every shift . . . "and this really adds up to important savings."

Find out how Allis-Chalmers equipment can bring new efficiency to your stripping and reclamation work. See your Allis-Chalmers Construction Machinery dealer.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

**ALLIS-CHALMERS**

# NOW all the advantages of AKINS HMS Separators and AKINS EXPERIENCE in a transportable unit

**1938... Akins on Heavy Media.** Experimentation on the use of Akins Spiral Classifiers in making a sink and float separation was first started in 1938. Continuous research, on pilot plant and commercial scales, resulted in development of the Akins Separator... a modification of the classifier which retains all of the important mechanical features of the Akins. In 1944 the first 78" Akins Separator was placed in successful operation by one of the large iron mining companies.

**1956**

This compact unit, mounted on a flat bed truck trailer, was designed and built by S. E. Hollister and R. G. Godfrey, Consulting Engineers, Los Angeles. It is ideal for small commercial operation or for low cost pilot plant work. It includes a 24" Akins Separator and a 16" Akins Densifier.

The unit shown has been used successfully on two different manganese oxide ores, handling 25 tons per hour. On one property it easily met the stockpiling program specifications; on the company's other property it produced a concentrate with better than 40% $MnO_2$, for direct carload shipment.

This unit is achieving outstanding results, in both grade and recovery, through extraction of middlings... **taking advantage of Akins' ability to make a 3-product separation in one machine, requiring only one media circuit.**

***Akins—the ORIGINAL spiral type classifier.***

**COLORADO IRON WORKS CO.**

**1624 17th Street • Denver 2, Colorado**

**AKINS CLASSIFIERS • SKINNER ROASTERS • LOWDEN DRYERS**

***Sales Agents and Licensed Manufacturers in Foreign Countries***

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.


17-year-old boy purchased certain merchandise and delivered it to the boy. The agreement between the employer and the boy was that the boy was to repay the employer a certain amount each week. In the meantime the employer held the legal title to the merchandise. Later the boy delivered the merchandise back to his employer and demanded the return of $530, which he had paid the employer.

The lower court held that the employer could keep $280 of the $530 as rental while the boy had used the merchandise. The higher court reversed this verdict, holding that the employer must refund to the boy the full $530.

The higher court also held that the seller who sold the merchandise to the boy's employer had no liability because the purchase money was paid to the seller by the adult employer who took legal title.

This court explained that when a seller sells equipment, merchandise, or materials to a minor, the latter can at any time return the subject of the sale and demand return of the full purchase price. This is so, although the minor made use of the subject of the sale and depreciated its value.

### Restrictive Contract

A reader asked this question: "Can we make an enforceable contract to prevent employees who leave our employment from taking employment with competitors? Due to present conditions, we want to make contracts with employees so that they cannot take employment with our competitors."

Generally speaking, restrictive contracts of this nature are valid which are intended to prevent employees from taking competitive employment within a reasonable period of time, such as one or two years, in the exact territory in which the employer's customers are located. However, indefinite and broad contracts are void.

For illustration, in *Weill Distributing Company v. Brown*, 29 S. E. (2d) 54, it was shown that an employee worked with his employer under a contract which contained a clause forbidding the employee, after termination of the employment, from ever taking employment with a competitor. No specific area of territory was mentioned.

Later the employee took competitive employment, and the legal question arose whether the contract was enforceable and valid. In holding the contract void, the court said:

"The period of employment is for 'an indefinite period'. The duties to

be performed, the services to be rendered, the place of employment, and the amount of compensation, all of which are vital parts of the purported contract, are all uncertain and indefinite. Such contracts, because of indefiniteness, are unenforceable."

This court explained that contracts of this nature should clearly specify: (1) the present duties of the employee; (2) the territory in which he works, and is to be restricted; (3) the duration of the restriction, which should be not more than 5 years; and (4) the "consideration" which renders the contract valid, *e. g.*, the fact that the employee is being given employment when such a contract is signed.

However, contracts of this nature are not valid with respect to common employees, such as clerks, laborers, bookkeepers, cashiers, and watchmen.

### Profits and Sales Up in 1955 For Nonmetallic Producers

Producers in the nonmetallic minerals industries last year reported generally higher sales and profits.

Minnesota Mining & Manufacturing Company reported its largest dollar increase in sales and earnings in its 54-year history. Consolidated sales in 1955 were $281,860,717, an increase of $50,970,235 or 22 percent over its 1954 record of $230,890,482. Net income after taxes and preferred dividends increased 41 percent to $34,323,370, compared with $24,241,885 in 1954.

Asbestos Corporation Limited, in a report for the year ended December 31, 1955, shows a net profit of $5,039,169, or $2.79 per share, compared with $4,366,918, or $2.42 a share, in 1954. Net income before taxes was $6,756,069.

Net income of Basic, Incorporated (formerly Basic Refractories, Incorporated), for 1955 reached record levels, according to the annual report. An increase of 161.67 percent over the 1954 level brought the income to $1,574,218. Total revenues amounted to $20,766,183, as compared with $12,443,961 in 1954.

Georgia Marble Company reported a net income for 1955 of $1,403,449, compared with $908,354 in 1954. Sales totaled $10,823,483 in 1955, against $7,774,403 in 1954.

A slight increase in sales during 1955 was reported by the Warner Company. Net sales amounted to $25,981,859 (unaudited), in comparison with the 1954 total of $25,202,583. Net income of $2,517,117 was 14.5 percent below the 1954 total of $2,943,601.

# Manufacturers' News

F. L. Munger, vice-president and sales manager of Kraft Bag Corporation, New York, N. Y., announces that Ed Burgers, Jr., formerly sales representative in the St. Louis area, has been appointed sales promotion manager, with headquarters at 630 Fifth Avenue, New York. Mr. Burgers' duties include sale and promotion of the Company's automatic open mouth bag filling machine, *The Kraftpacker,* in addition to development of new business for multiwall shipping sacks manufactured by Kraft Bag Corporation at its integrated plants at St. Marys, Georgia, and Gilman, Vermont.

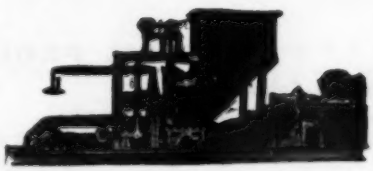
James H. Sutherland has been appointed to the position of midwestern regional sales manager of SKF Industries, Inc., Philadelphia, Penn. He succeeds Philip A. Carlson, who is retiring after 33 years of service with the company.

Mr. Sutherland has been associated with SKF in various engineering and sales capacities for over 12 years. He served as senior division engineer in Philadelphia for eight years, then as field engineer and later district manager in Pittsburgh. In 1955 he was appointed district manager of the SKF office in Chicago, where he will continue to make his headquarters.

Mr. William Passmore, formerly an SKF field engineer in the Chicago Office for 12 years, has been named to succeed Mr. Sutherland as district manager in Chicago.

Charles H. Kimball, recently added to the sales representative staff of Iowa Manufacturing Company, Cedar Rapids, Iowa, will represent the Cedar Rapids line of aggregate producing and bituminous mixing equipment in Arizona, Colorado, New Mexico, Utah, Southwest Texas, and Southern California. His headquarters will be in Scottsdale, Arizona.


"The Sun never Sets" on



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Over 1400

now serving Industry in world-wide installations

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Bulk material producers in both hemispheres use and acclaim these remarkable machines.

Doing every scaling job *well*, Poidometers accelerate material flow, maintain product uniformity, improve plant output and profit records.

Poidometers operate automatically, extremely accurately, and at high speed. They combine simplicity in design with durability, assuring years of continuous, low-cost service.

Available with total weight recorders, and remote controls for showing and changing feed rate.

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CF&I STEEL PRODUCING PLANTS

**CF&I Pueblo, Colorado**

Blast Furnaces and Open Hearths producing pig iron, ingots, blooms, billets and rods.

**CF&I Buffalo, New York**

Blast Furnaces and Open Hearths producing pig iron, ingots, blooms, billets and rods.

**CF&I Claymont, Delaware**

Open Hearths producing ingots and steel plate.

**CF&I Roebling, New Jersey**

Open Hearths producing ingots, blooms, billets and rods.

**CF&I Brooke, Pennsylvania**

Blast Furnaces producing basic, Bessemer, foundry, malleable and low phosphorus pig iron.

CF&I FABRICATING PLANTS

**The quality of CF&I steel products is firmly controlled since the requirements of each product determine the analysis of the steel.**

**CF&I Buffalo, New York**

Fine and Specialty Wire of all types including Manufacturer's Wire (Basic, Spheroidized, Annealed, Tempered, Bright and Liquor Finish, Low and High Carbon)—Welded Wire Fabric—Chain Link Fence—Galvanized Strand.

**CF&I Claymont, Delaware**

Flanged and Dished Heads—Carbon and Alloy Steel Plates—Stainless-Clad Plates—Nickel Lectro-Clad Plates—Manhole Fittings and Covers—Large Diameter Welded Steel Pipe—Flame Cut Steel Plate Shapes.

**CF&I Clinton, Mass.**

Poultry Netting—Hex Mesh Nettings—Hardware Cloth—Industrial Wire Cloth—Alloy Processing Belts—Perforated Metals—Overhead Conveying Equipment—Sliding Door (Industrial) Hardware.

# SELL; BUT TO SERVE...

**. . . not only to make good steel products; but to make them still better . . . not only to fulfill today's requirements; but to anticipate tomorrow's—these are the principles that constantly guide CF&I."**

This is—and always has been—CF&I's basic policy.

Next time you're in the market for steel or steel products, it'll pay you to contact CF&I.

**CF&I Mt. Wolf, Pennsylvania**
Insect Wire Screening and Industrial Wire Cloth.

**CF&I Oakland, Calif.**
Fish and Crab Trap Netting—Stucco Netting—Poultry Netting—Hardware Cloth—Industrial Wire Cloth—Straightened and Cut Wire—Reinforcing Tie Wire—Mechanic's Wire—Chain Link Fence—Crimped Wire.

**CF&I Palmer, Mass.**
Wire Rope—Wire Rope Slings—Wire, all types (see Buffalo Plant)—Wire Clothesline—TV Guy Wire—Aircraft Control Cable.

**CF&I Pueblo, Colo.**
Bar, Rod and Structural Products—Grader Blades and Cutting Edges—Rails and Accessories—Chain Link Fence—Woven Wire Fence—Fence Stays—Fence Posts—Corn Cribs—Welded Wire Fabric—Nettings—Grinding Balls and Rods—Screen and Grizzly Bars—Rock Bolts—Galvanized Strand—Clothesline—Barbed Wire—Manufacturer's Wire (Basic, Chain, Spring, Stapling, Weaving, Welding)—Merchant Wire (Annealed and Galvanized)—Nails—Bolts—Nuts—Spikes—Seamless Casing and Tubing.

**CF&I Roebling, N. J.**
High Carbon Steel Wire (Hard Drawn, Spheroidized and Tempered)—Rope Wire—Tire Bead—Hose Wire—ACSR Core Wire—High Carbon Spring Steel Wire (All grades, tempers and finishes)—Regulator, Sash Balance and Flapper Valve Wire.

**CF&I Roebling (Trenton), N. J.**
High and Low Carbon Flat Wire (All tempers, edges and finishes)—Brush, Corset, Casing, Heddle and Drop Wire, Umbrella Wire and Tape Lines—Wire Rope—Strand, Aircord and Fittings—Wire Rope Slings—Electrical Wire and Cable and Magnet Wire.

**CF&I So. San Francisco, Calif.**
Galvanized and Annealed Merchant Wire—Galvanized and Annealed Stone Wire—Bale Ties—Baling Wire—High and Low Carbon Wire—Galvanized and Annealed Wire—Copper Coated Wire—Rope Wire—Welding Wire.

**CF&I Worcester, Mass.**
Valve and Clutch Springs—Starter Springs—Tire Chain Adjusters—Cross Chain Repair Links—Mechanic's Wire—Compression, Extension and Torsion Springs of all types—Formed Wires.

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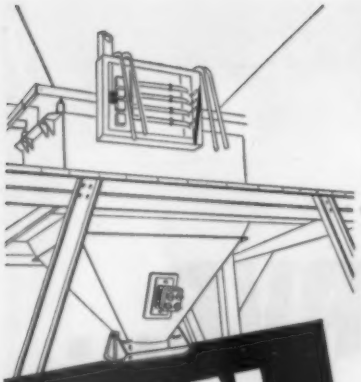

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Did you know that $24.45* will buy a small air vibrator to keep your weigh batch hopper clean?

A great many ready-mix plants are using economical Cleveland Vibrators to keep large bins free flowing—unload railroad cars—keep chutes clean—and countless other jobs.

How can we assist you?

*1¼ Type F.

Write for literature today on the complete line of CLEVELAND AIR AND ELECTRIC VIBRATORS.

THE CLEVELAND VIBRATOR COMPANY

2710 Clinton Ave. • Cleveland 13, O.

Recently the Orton Crane and Shovel Company, Chicago, Ill., delivered to the Marine Corps at Albany, Georgia, a crane which the Orton Company believes to be the largest full-circle crane ever mounted on rubber tires. The machine is being used to lift heavy military equipment, and with a capacity of 50 tons at a 12-foot radius, it is a particularly valuable machine for industrial plants requiring the handling of heavy machinery and equipment.

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Richard S. Connolly, formerly sales engineer with the Heavy Steel Forms Department of Blaw-Knox Company, Pittsburgh, Penn., has been named assistant sales manager of that department.

Mr. Connolly joined the Blaw-Knox Company in 1947 and since that time, he has worked on forming problems for many outstanding construction projects, involving bridges, dams, vehicular and hydroelectric power tunnels and thin shell arch concrete buildings in the capacities of design engineer and sales engineer. Prior to joining the Blaw-Knox Company, he was with the Dravo Corporation for a short time as an engineer in their Marine Engineering Department.

Mr. Connolly lives at 1027 N. Negley Avenue, Pittsburgh.

R. S. CONNOLLY

R. C. VROOM

Ernest H. Peabody, president and chairman of the board of Peabody Engineering Corporation, New York, N. Y., manufacturers of oil, gas and multifuel burners, air heaters, and gas scrubbers, announces the appointment of R. C. Vroom as vice-president.

Mr. Vroom, a member of the board of directors of Peabody Engineering Corporation, has been with the company for 33 years. His new duties will include broadened management problems, with particular emphasis on coordinating sales and engineering, and implementing management policies and programs in conjunction with E. G. Peterson, executive vice-president.

A major expansion of the national sales structure of Motorola Communications and Electronics, Inc., Chicago, Ill., the establishment of four geographical sales divisions and the appointment of six vice presidents have been announced by Daniel E. Noble, vice-president.

In the new alignment, Arthur L. Reese, formerly assistant secretary,

A. L. REESE

E. S. GOEBEL

was appointed vice-president and operations manager.

Eugene S. Goebel, formerly national sales manager, was appointed vice-president for market relations, with duties to include public and customer relations, and other special staff assignments.

Four former regional managers in the field were appointed vice-presidents and placed in charge of the new sales divisions. They are: Lowell E. White, vice-president and eastern sales division manager; Homer L. Marrs, vice-president and east-sales division manager; Edward L. Falls, Jr., vice-president and southern sales division manager; and Donald F. Brickley, vice-president and western sales division manager.

All appointments are effective immediately.

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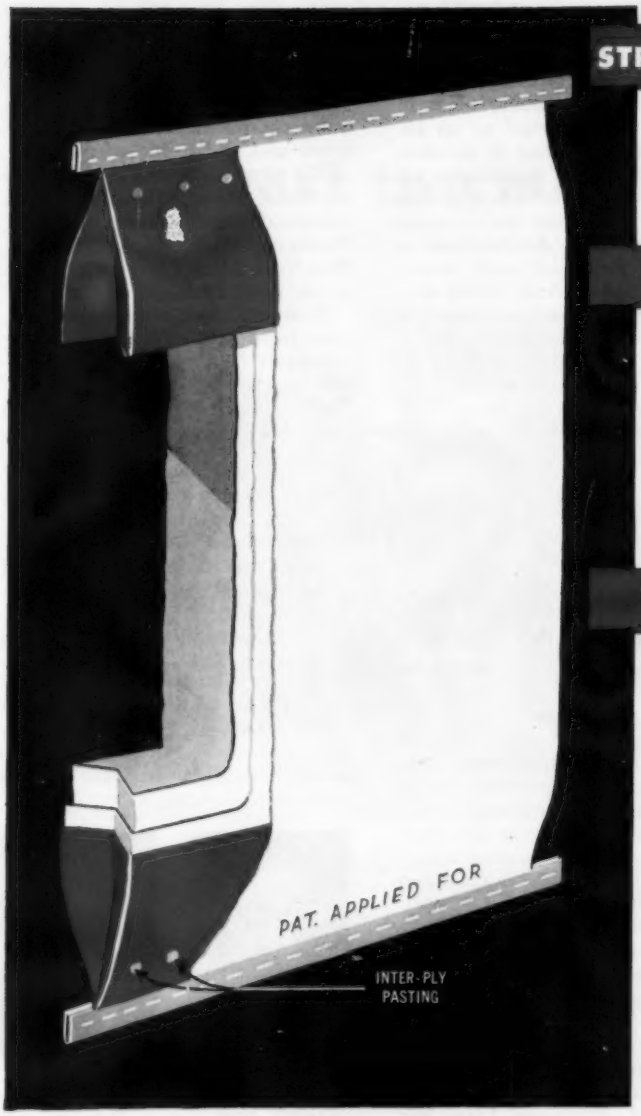
Samuel A. Pond, industrial relations director for the Chemical Division of Food Machinery and Chemical Corporation, New York, N. Y., has announced the appointment of John Pauly as labor relations manager of FMC Chemical Divisions.

John Pauly has been staff assistant for labor relations in the FMC Chemical Divisions New York Office for the past two years. During World War Two, he was assistant superintendent of Westvaco's magnesia plant at Newark, California and later superintendent of the catalyst plant operated by Westvaco at Newark for the government Rubber Reserve program. He has also served as industrial relations manager at the Newark, California, and at the Pocatello, Idaho, plants of FMC's Westvaco Mineral Products Division.

# New *Strength-end** Bemis Multiwalls

## the shipping sack with BALANCED STRENGTH




### STRONGER AT THE RIGHT PLACES

New Bemis Strength-End Multiwalls, strengthened top and bottom where most sewn bag breakage is experienced, will cut packing troubles and costs for you.

### TWO WAYS TO SAVE

You'll save money one of these two ways with Bemis Strength-End Multiwalls: You may switch from a more expensive type of shipping container. Or, if you are already using multiwalls, you might use bags with fewer plies, because of the greater end strength, where it is needed. Bemis Strength-End Multiwalls may, at lower cost, do your job as well or better.

### SUCCESSFULLY TESTED

Bemis Strength-End Multiwalls have been successfully tested in all sections of the country and under all climatic conditions. They have proved themselves for packing cement, fertilizer, chemicals, flour, salt.

### Here's how it's reinforced

The reinforcement in Bemis Strength-End Multiwalls is a strip of sturdy kraft, several inches wide, running horizontally around the bag at the ends . . . anchored to the other walls so it works in conjunction with them . . . and adding greatly to the strength both at the sewing line and at the gusset corners. It's just plain, common-sense, balanced strength construction.

*TRADE-MARK

*Get the complete story about Bemis Strength-End Multiwalls from your Bemis Man.*

**Bemis** BEMIS BRO. BAG CO.

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

E. E. McVeigh has been named manager of sales engineering by the Baker-Raulang Company, Cleveland, Ohio. He joined Baker in 1940. His sixteen years of experience in the materials handling field have included field engineering and sales work. He has done extensive work in warehouse layout, and is responsible for many developments in the fork lift industry.

E. E. McVEIGH

J. L. DUESENBURY

J. L. Duesenbury has been named head of the proposal and contract department of Western Precipitation Corporation, Los Angeles, Calif. He joined the Western Precipitation organization in 1952 after having had considerable experience as a consultant in the power plant field. Serving Western Precipitation, first in the head offices as an estimator and subsequently in the field as a construction engineer, Mr. Dusenbury was promoted last year to assistant chief estimator, which position he now leaves to take charge of contracts and proposals.

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The Industrial Power Division of the International Harvester Company, Chicago, Ill., is now known as the Construction Equipment Division, according to an announcement by Harald T. Reishus, vice-president of that division. The change applies to name of division only and does not affect personnel or line of equipment.

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Andrew V. Chandler has announced the formation of Rotary Drilling Equipment, Inc., with offices at 221 W. Olive St., Scranton, Pa. The company will serve the eastern states with drilling machines and equipment. This equipment is used mainly for the drilling of water wells, blast holes, seismograph drilling, and shot hole work.

Some of the lines that are now being handled by Rotary Drilling are: Davey Rotary Drills, Williams Hole-maker Rotary Bits; Herb J. Hawthorne Drag Bits. In addition, the company is manufacturing drill rods, stabilizers, and bit adapters.

Wm. B. Stephenson has been elected president of The Allen-Sherman Hoff Pump Co., Wynnewood, Penn., succeeding Homer E. Allen, who will serve as chairman of the board of directors. Mr. Stephenson is succeeded as vice-president by Fred S. Stow, who will continue as chief engineer, with Gordon Stieff as assistant. Donald G. Ashe has been named assistant sales manager at the home office. Wm. M. Walters is Central district sales manager with headquarters at the company's Chicago office, and Robert M. Jensen has been placed in charge of the company's New York office.

Well known in mining fields of this country and abroad as an authority on the pumping of abrasives and corrosives, Mr. Stephenson has been identified with A-S-H pumps since 1933. Since then the company has made extensive developments in its lines of *Hydroseal* sand, dredge and sump pumps. And, it was during his regime as vice-president that the series of interchangeable *Hydroseal* and *Centriseal* rubber-lined slurry pumps were introduced.

W. B. STEPHENSON

F. J. WEITEKAMP

Frank J. Weitekamp was elected secretary of the Thor Power Tool Co., Aurora, Ill., at a recent directors' meeting. He succeeds John A. McGuire who was recently named vice-president and who is also chairman of the executive committee.

Mr. Weitekamp, who is also comptroller of the company and treasurer of the Thor Speedway Division, had been comptroller and assistant secretary-treasurer since 1945. He joined Thor's accounting department in 1937.

---

New district sales managers for industrial rubber products in Pittsburgh and Baltimore have been announced by United States Rubber Co., New York, N.Y.

Henry Davis, Jr., formerly sales manager in Baltimore, has been placed in charge of the larger Pittsburgh district. He is succeeded in Baltimore by Douglas M. Smith, formerly a salesman in that area.

Methods used by typical American communities to solve their auto safety, traffic and highway construction problems are portrayed in a new motion picture produced as a public service by Ford Motor Company, Dearborn, Michigan.

The 27-minute, 16-millimeter sound movie is available free to schools, churches, civic clubs, fraternal and educational organizations and other groups throughout the United States.

The film, titled "Freedom of the American Road," shows how individuals and groups in communities across the country have worked together to build better roads, develop traffic-control methods and promote driver and pedestrian safety.

The film may be obtained by writing Ford Motor Company film libraries at 16400 Michigan Avenue, Dearborn, Mich.; 16 E. 52nd St., New York 22, N.Y., and 4303 Telegraph Ave., Oakland 9, Calif.

Ford also has published a 120-page book called "Freedom of the American Road." More than 200,000 copies of the book have been distributed free to interested groups and individuals throughout the world.

---

Wyn McCoy, formerly district manager, Industrial Division of The Timken Roller Bearing Company's Chicago territory, has been promoted to sales promotion manager, Industrial Division at Canton, Ohio. He began his career with the Timken Company in 1940. He started in the Industrial Sales Engineering Training program and, after a period of military service during World War II, was sent to the Chicago office as field engineer. In 1952 he was made district manager.

W. McCOY

W. G. DUNN

W. G. Dunn is now in Canada on assignment for Western Machinery Company, San Francisco, Calif., coordinating the production of Wemco products manufactured in Canada through Canadian Vickers in Montreal. Until recently he was assistant to Western Machinery Company president Jack H. How.

# INTERNATIONAL sells more 6-wheel trucks than the next two makes combined!

**And this kind** of sales leadership has been going on every year for the past 21 years! One big reason: Actual cost records of the professional fleet operators—the men who *know* truck costs—prove these trucks cost less to own. Let your INTERNATIONAL Branch or Dealer show you in black and white, today. INTERNATIONAL HARVESTER COMPANY, Chicago.

**INTERNATIONAL® TRUCKS**

FIRST with men who know truck costs!

**SAFETY INSURED**—When a 41,300-lb. section of stone crushing equipment was placed by an American 700 Series Crawler Crane, Crosby Clips were used on all wire ropes to assure maximum safety for men and equipment. Genuine drop-forged, hot-dip-galvanized Crosby Clips, with the famous Red-U-Bolt, are specified for safety on more jobs than any other drop-forged wire rope fasteners.

**STRONG SAFE, BLOCK**

When cofferdam sheetings were about to be drawn from the sucking, grasping soil of the Platte River bottom, a Load-Rated Crosby Crane Block was specified. Made of highest-quality steel, and engineered for safety as well as efficiency, Crosby Blocks are backed by the famous Crosby name—recognized leader in safety. When using Crosby Blocks, workmen can't go wrong, for the safe lifting capacity is embossed right on the side plates.

**EASY TAKE-UP**

Important design advances by the makers of famous Laughlin Turnbuckles offer added safety and efficiency to users in the construction field. Laughlin Turnbuckle bodies have extra-heavy hex ends which allow fast, easy take-up with a wrench. An exclusive eye design takes the ear of a shackle one size smaller and is stronger than conventional eyes because it conforms more closely to the lines of pull. This design also makes it easier to attach thimbles and other fittings. Exceptionally strong, Laughlin hooks have added heft at points of greatest stress—the ¼-inch hook is actually stronger than most ⅜-inch hooks. Available in a complete range of sizes. A reference chart in Laughlin's free catalog lets you select the proper size turnbuckle for each job.

**ATTACH IN SECONDS**

A more efficient clevis grab and slip hook made by Laughlin has a "Crimp Style", cotter that can be removed and attached in seconds. Available in a complete range of sizes at distributors everywhere, Laughlin Clevis Grab and Slip Hooks are made of drop-forged steel special forging quality and are heat-treated for maximum strength. For free catalog on the complete Laughlin and Crosby lines, write the Thomas Laughlin Division, Portland, Maine, or the American Hoist & Derrick Co., St. Paul 1, Minnesota.

Continued expansion of Thor Power Tool Company, Aurora, Illinois, requires larger executive headquarters conveniently located in a major business center, Neil C. Hurley, Jr., president, said in announcing that plans have been made to move executive administration offices to the new Prudential Building, Chicago, Ill.

All executive officers in the company's management and sales groups, and division managers in sales and sales promotion, will be involved in the transfer which is slated for October or November. Present executive offices in the company's Aurora headquarters will be retained to maintain supervision of Thor's principal administrative departments.

Pointing out that Thor's recent acquisition of Cincinnati Rubber Co., and location of other manufacturing divisions at Aurora, Los Angeles, Cicero, Ill., and Tynemouth, England, necessitated offices in a transportation and communications center, Mr. Hurley stated that the Chicago move is a logical one.

The Denver branch office of Thor Power Tool Company has been moved to new enlarged quarters at 2704 West 8th Avenue in the heart of Denver, Colorado. Headed by C. H. Gabriel, Thor's Denver branch manager, the branch serves Colorado, Utah, Wyoming and parts of New Mexico, Idaho, Nevada, Oregon, South Dakota and Montana.

Smith Engineering Works of Milwaukee, Wisconsin, manufacturers of *Telsmith* equipment for Quarries, Gravel Plants, Contractors and Mines, announces the appointment of Emmett C. Watson Co., Inc. of Louisville, Ky. as their exclusive distributor for Kentucky and Southern Indiana.

Milton G. Peck, Gar Wood Industries' vice-president and director of sales, has announced that the Gar Wood factory branch in Chicago, one of the firm's largest has been sold to J. A. Sloan, formerly district manager of the Mack Motor Company's factory branch in Omaha, Nebraska. The Gar Wood operation will continue to provide sales and service for Gar Wood and Gar Wood—St. Paul truck equipment in the Chicago area.

The new firm will be known as Gar Wood Chicago Truck Equipment, Inc., and all activities of the firm will, for the present, be carried on at the same building and location that housed the former factory.

**Cut down man hours! Speed up hole drilling!**

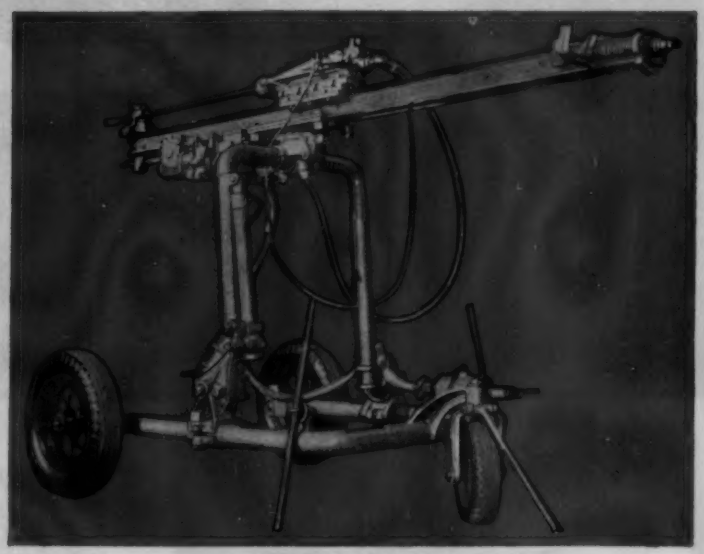
# 2 new more powerful Thor wagon drills!

## THOR SW-1

**Compact size—3 wheel reinforced rig • Weight with model 75 drifter—768 lbs. • 2 handle controls movable along mast • Handles up to 3½" bore drifter • New centralizer swings out of way for close drilling • Mast swings 360° vertical or horizontal • Wet or dry operation**

## *General purpose SW-1 • Heavy duty BW-2*

Now Thor offers two new wagon drills to fit every drilling requirement — wagon drills which will outperform and out-last other models. Drill holes in any direction, at any angle, on level or sloped ground. One man operation cuts costly man hours. Check these features on the new heavy duty BW-2 and the general purpose SW-1 and then call your Thor contractors tool distributor for a free trial of the model that fits your job.



## THOR BW-2

**5 h.p. rotary air motor • 3 wheel reinforced heavy-duty rig • Variable speed control • Motor and controls movable along mast • Wet or dry operation • Mast swings 360° vertical and horizontal • New centralizer swings out of way for close drilling • 800 to 1000 lbs. pulling power for steel removal • Spring buffer prevents chain breakage • Equipped with Thor 105 drifter. (4" bore)**

Thor PORTABLE POWER TOOLS

**THOR POWER TOOL COMPANY, AURORA, ILL.**

| | | | | | |
|---|---|---|---|---|---|
| Atlanta | Chicago | Detroit | Newark | St. Louis | Export Division, |
| Birmingham | Cincinnati | Houston | Long Island City, N.Y. | San Francisco | New York City |
| Boston | Cleveland | Los Angeles | Philadelphia | Seattle | |
| Buffalo | Denver | Milwaukee | Pittsburgh | Toronto Canada: | |

Completed in 1954, this Research-Cottrell precipitator cleans the gases from Kiln No. 5 of Missouri Portland's Prospect Hill Plant. The gases from this rotary wet process kiln pass from the kiln end housing, through the precipitator, induced draft fan and then up the stack.

Rapping puffs were eliminated in this installation with Research-Cottrell's electronically controlled M. I. Rappers. This method of continuous, sequential rapping avoids dust re-entrainment in the gas stream and assures optimum precipitator performance at all times.

# Research-Cottrell Precipitator

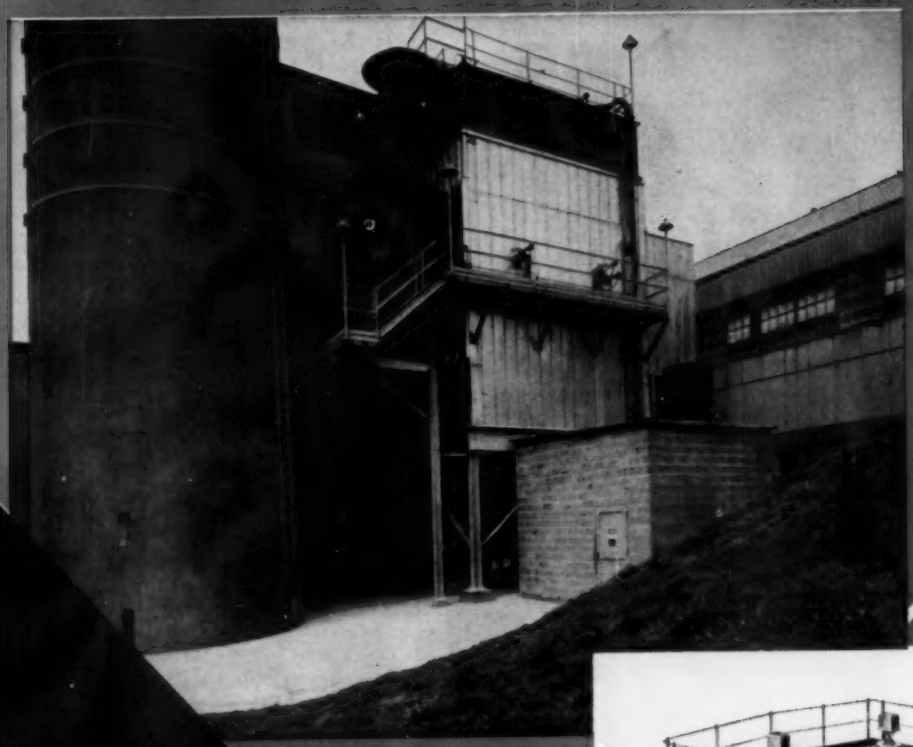
## at Missouri Portland

In addition to this installation, Missouri Portland has ordered three more Research-Cottrell precipitators. One, installed early this year, cleans the gases from Prospect Hill's 12′ x 450′ wet process kiln.

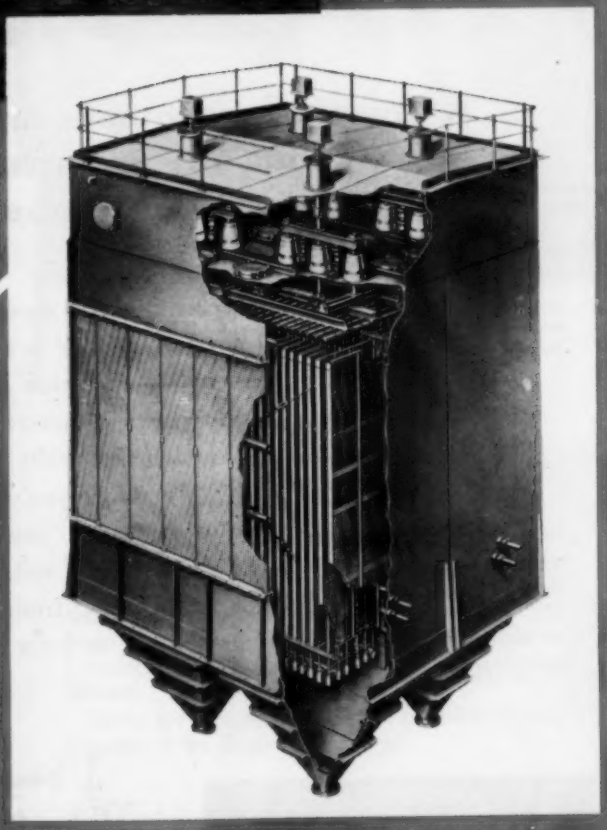
Two other units have been ordered for two dry process kilns at the Sugar Creek Plant, Kansas City, Mo. M. I. Rappers will be included on all these installations.

For a detailed description of Research-Cottrell precipitators and their applications in the cement industry, write for Bulletin GB.

RC 160



At Left:
Shows Research-Cottrell precipitator, connecting flues and stack. Cement block building in foreground at right is substation which contains two half-wave rectifier sets and M. I. Rapper control equipment.



At Right:
Cutaway drawing of the Research-Cottrell expanded metal plate precipitator installed at Prospect Hill Plant of Missouri Portland Cement Co.

# Research-Cottrell, Inc.

Main Office and Plant: Bound Brook, New Jersey • 405 Lexington Ave., New York 17, N. Y.
Grant Building, Pittsburgh 19, Penna., 228 No. La Salle St., Chicago 1, Ill. • 111 Sutter Bldg., San Francisco 4, Cal.

# MORE ON-THE-JOB TIME

**when you use hoists and bodies that are preferred for the really tough jobs**

When it comes to a competitive showdown, MARION bodies and hoists lead the way. In performance . . . in economy of operation . . . in dependability and long life, truck owners have found MARIONS will handle the really tough jobs faster and more profitably. Once you've used a MARION, there's little chance you'll be satisfied with any other dump body and hoist. Get all the job-proven facts today from your nearby MARION Distributor . . . or write direct to the factory

MARION
BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO

Charles L. Holbert has been appointed executive vice-president of H. K. Porter Company, Inc., New York, N.Y. He will be operating head of Porter, succeeding Clarence R. Dobson, who has retired.

Mr. Holbert came with Porter earlier this year as a vice-president. Before joining the Company he was executive vice-president of the Southern Pacific Milling Company, Ventura, California. Previously he was vice-president and general manager of the Johnston Pump Co.

---

Appointment of Stanley J. Coffey as western off-highway equipment sales representative has been announced by Mack Motor Truck Corporation, Los Angeles, Calif., a division of Mack Trucks, Inc.

Previously Mr. Coffey was sales manager for eight years for Cummins Diesel Sales of Oregon with headquarters in Portland. He joined the Cummins organization in 1942, also becoming manager of Cummins Diesel Sales of Illinois and manager of regions for Cummins Engine Company, Columbus, Ind.

---

Patrick E. Dempsey, professional engineer in metallurgy with a wide experience in every phase of making, shaping and treating of steel, has been appointed chief metallurgist of Kensington Steel Company, Chicago, Illinois, a subsidiary of Poor & Company. His previous experience includes all phases of aluminum melting, casting and working at Aluminum Company of Canada, open hearth metallurgy at Dominion Iron and Steel, Ltd., and forge and foundry metallurgy at Sorel Industries, Ltd.

---

H. G. Edbon, vice-president and general sales manager of Combustion Engineering, Inc., New York, N.Y., has been named executive vice-president. He joined the company in 1917 and since 1925 has served successively as manager of the proposition department, sales engineer, assistant general sales manager and general sales manager. In 1950, he was elected a vice-president.

---

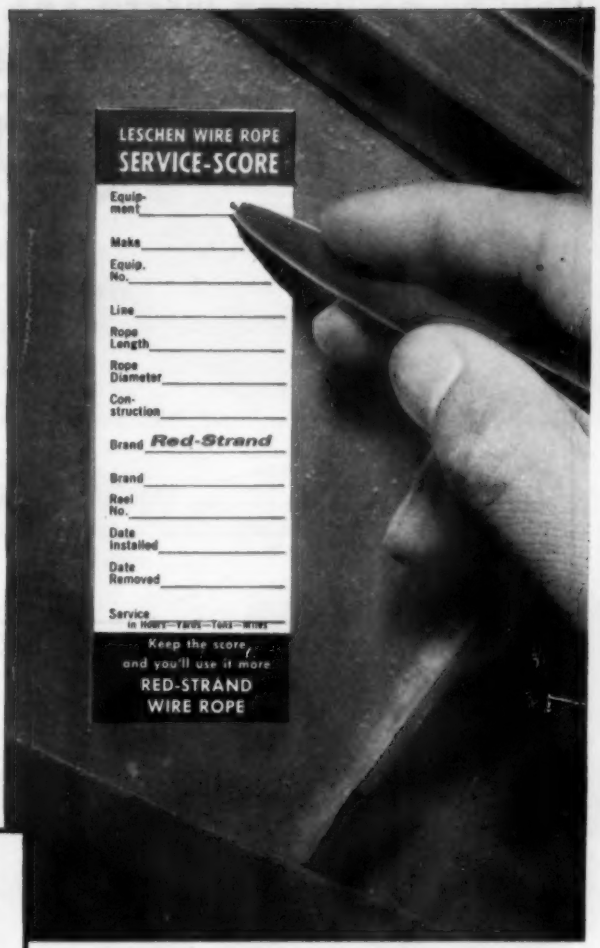
Horace Y. Bassett has been elected executive vice-president of Calumet & Hecla, Inc., Chicago, Ill. He has been vice-president of operations since 1953.

---

Farrel-Birmingham Company, Inc., Ansonia, Conn., has moved its Chicago office to new and larger quarters at 10725 South Western Ave.

# Now Leschen Offers

# NEW WIRE ROPE Service-Score SYSTEM

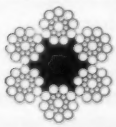



**Simple plan tests wire rope performance and costs—shows comparative values—helps reduce operating expenses—speeds reordering.**

Leschen's quick-fact-finding Service-Score System utilizes easily applied, easily removed pressure sensitive stickers, which record equipment and rope data, dates of rope installation and removal.

What is your *true* wire rope cost? Do you know? Are you using the right rope type or construction? The right brand?

Questions like these are readily answered with Leschen's new Wire Rope Service-Score System.



Service-Score stickers report performance—type versus type, brand versus brand. Performance facts reveal costs and help *cut costs*.

Service-Score stickers provide easily-available, *helpful reordering data*—equipment identification, wire rope diameter, length, construction, date installed, and date removed.

Service-Score stickers remind operators when it's time to replace rope—*increasing safety* margins.

Service-Score records enable you to check and compare wire rope types and constructions. For example, you find for yourself, as others have, that Red-Strand consistently scores high. You learn the advantages of super-strength Porter Imperial Red-Strand, or Hercules Flattened Strand.

Write for sample stickers. Or see your nearby Leschen Wire Rope distributor.

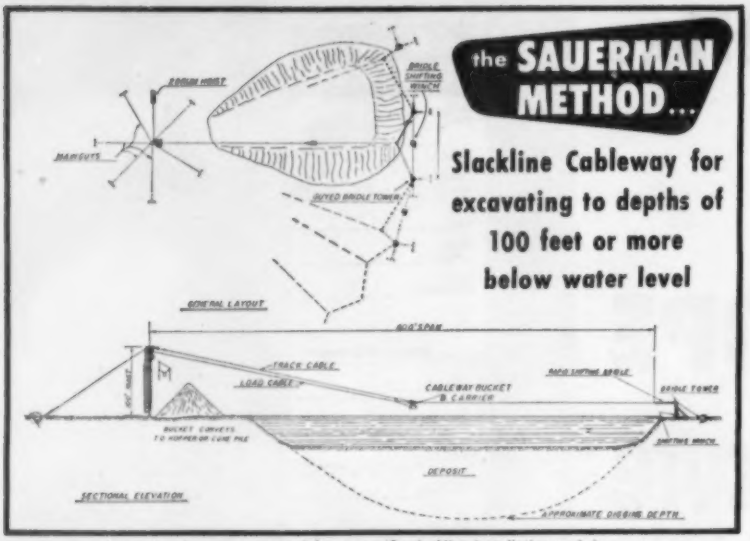
**LESCHEN**
***Red-Strand***
**WIRE ROPE**

*Keep the score and you'll use it more—Red-Strand Wire Rope*

**LESCHEN WIRE ROPE DIVISION**
**H. K. PORTER COMPANY, INC.**
**St. Louis 12, Missouri**

A division of HKP H. K. PORTER COMPANY, INC.

# HOW TO GO UNDER WATER AND GET ALL THE MATERIAL FROM YOUR DEPOSIT




*Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.*

*Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. (Full details in Sauerman News No. 143.)*

*New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth* (Sauerman News No. 141).

Deposits below water yield new profits with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

**SAUERMAN BROS. INC.**

**634 S. 28th AVE. | BELLWOOD, ILL.**

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks


Burt H. Payne, chairman of the board of Stulz-Sickles Company, Newark, New Jersey, announces that ground has been broker. for the firm's new plant and offices at Elizabeth, New Jersey.

The new building will be erected on a two-acre tract near U.S. Highway #1 in North Elizabeth, New Jersey, in an industrial area convenient to all shipping facilities. Upon completion of the building, scheduled for September, 1956, all operations now carried on at the Newark plant will be transferred to the new location.

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Robert L. Wicker, sales manager of the Federal Motor Truck Division, Napco Industries, Inc., Minneapolis, Minn., has assumed additional duties as sales manager of the Construction Equipment Division. Orv Reynolds will be assistant sales manager of the Construction Equipment Division.

Mr. Wicker, formerly sales manager of the Dart Truck Company in Kansas City, joined Napco last December. Orv Reynolds, now assistant sales manager, has been promoted from the position of regional sales manager. Assisting both men is Earl Neville of Mahtomedi who serves as sales engineer, preparing estimates and quotations.

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Appointment of Anthony D. Eastman as director of industrial relations of The General Tire & Rubber Company, Akron, Ohio, has been announced. He assumes his new position immediately with headquarters in Akron, and will report directly to the office of the president.

Mr. Eastman's most recent assignment was as vice-president of sales, Gold Seal Division of Congoleum-Nairn, Inc., Kearny, N.J. He joined the eastern company in 1952, following nine years of personnel work in the rubber industry.

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Hugh C. Riley has been named district representative for Erie Clamshell Buckets, manufactured by the Erie Strayer Company, Erie, Penn. His territory will include western New York, western Pennsylvania, West Virginia, Kentucky, Ohio, Michigan, Indiana, northern Illinois, and Wisconsin. He will devote his time exclusively to working with distributors, original equipment manufacturers, and dealers in his territory. Prior to joining Erie Strayer, Mr. Riley spent 8 years selling construction machinery, power cranes and shovels.

# "Maneuverable . . . that's why we bought it"

## Angelo Tomasso, Inc.

hauls 1,200 tons of hard trap rock per day to a crusher in their quarry at New Britain, Connecticut. To an equipment fleet at this quarry that included a 2-yard shovel, a 15-ton Rear-Dump, and a 9-ton dump-truck, the company added a 22-ton C Tournapull Rear-Dump.

"We bought this machine in anticipation of working on a shelf. It is very narrow up there and we need to maneuver around...one false move and the machine would drop 90 feet," says A. Tomasso, Jr.

### Maneuver safely on narrow roads

Tomasso and his crew soon found that Tournapull Rear-Dumps are well equipped to work safely on narrow shelves such as those encountered on this job.

Power steer makes the Tournapull easy and quick to maneuver. Prime-mover can turn 90° right or left for getting around in tight quarters.

In any emergency, Tournapulls' four-wheel multi-disc air brakes (with more braking surface on one wheel than most haulers have on all four) provide an extra bonus of safety. You can always depend on the Tournapull to stop instantly. Low center of gravity, good visibility, and front-wheel drive also contribute to Tournapulls' safety.

In the Tomasso quarry, rock crusher was located about 700 feet down 5% grade from the loading shovel. Rear-Dumps, hauling 18 tons of shot trap rock, traveled over the crushed rock haul-road in third gear, at speeds up to 11½ mph.

Comments Operator Albert Buchiere, "Trucks can't even get close to these machines. I've run about every type of haul unit there is and these 'Pulls are the best."

### Cut lubrication time

Not only did the Tournapulls save time and money on hauling, but, according to Mr. Tomasso, it takes only ⅓ as long to lubricate the C Rear-Dump as it does to lubricate an ordinary dump-truck.

If you have hauling to do, over narrow roads or in close quarters, you will want more information on Tournapull Rear-Dumps' high production. Available in 11, 22, and 35-ton capacities, a size to fit your requirements. Write for full details.

Much of the material to be moved is trap rock, one of the hardest stones in New England. Three-layer, all-steel, grid-type bowl with tool-steel floor resists shocks of loading. Big, wide bowl opening with low rear entry, is an easy target for this 2-yard shovel.

After one of New England's disastrous hurricane-floods, this Tournapull Rear-Dump took Civil Defense officials on a survey of damage in the area. It was the only unit in the area that could safely drive through the high water. Tournapull also helped to haul 270,000 yards of borrow and gravel over average 3½-mile distances to replace 4½ miles of the road, between Unionville and Collinsville, Connecticut.

When job report was taken, Tournapull was dumping into a 42 x 40-inch hopper. A flick of a switch activates hoist motor. Body lifts quickly, swings behind rear wheels to dump clean over bank, or into grizzly. Streamlined bowl sheds material readily. Body can also be held in any desired position for spreading on the run.

Tournapull—Trademark Reg. U.S. Pat. Off. R-966-Q-b

**LeTourneau-WESTINGHOUSE Company**

Peoria, Illinois

*A Subsidiary of Westinghouse Air Brake Company*

Formation of a Parts Department in Denver, Colo. has been announced by M. T. Deames, manager of parts, General Office, Caterpillar Tractor Co., Peoria, Illinois. The new department will supply Caterpillar dealers in the Rocky Mountain and Pacific Coast region with their normal parts inventory requirements. The Company's parts depot in Denver will continue to handle dealers' emergency orders.

In addition to the new department in Denver, Caterpiller has three other parts departments, located at Peoria and Joliet, Ill., and York, Pa.

C. L. Cousins has been appointed by the Baughman Manufacturing Co., Jerseyville, Ill., to represent the company as western district sales engineer—in the territory west of the Mississippi River and east of Denver. He will cover his territory in a Baughman plane.

Bruce Walsh has returned to the Baughman eastern sales division as eastern district sales engineer. He formerly worked in the eastern territory and was transferred to the western division in 1952. He will also handle the complete Baughman line, and cover his territory in a Baughman plane.

. . . testify to the growing acceptance of

**NI-HARD**
**GRINDING MEDIA**

A positive solution to the problem of low cost grinding and pulverizing.

Consistently improved performance in cement, mining, paint and industrial minerals applications.

Balls available in sizes from 5/8 to 3". Our modern plant was designed exclusively for NI-HARD ball production. Efficient production methods plus rigid control standards assure highest quality at economical prices.

The geographic location of our plant assures prompt service via truck, rail or sea.

Write for bulletin and samples.

**GRINDING BALLS, Inc.**
***Bridgeboro, New Jersey***
*(metropolitan Philadelphia)*


Announcement is made of the election of Clinton D. St. Clair to President of the "QUICK-WAY" Truck Shovel Company of Denver, Colorado, a subsidiary of the Penn-Texas Corp.

Mr. St. Clair is currently vice-president of Penn-Texas Corporation in charge of manufacturing. Previously he was general manager of the North Tonowanda Division of Rudolph Wurlitzer, and vice-president in charge of manufacturing of the Lunkenheimer Company, valve manufacturers of Cincinnati, Ohio.

"QUICK-WAY" Truck Shovel Company is a pioneer in the manufacture of truck-mounted power shovels and earth-moving equipment.

C. D. ST. CLAIR

S. A. OTT

Samuel A. Ott has been appointed works manager of the Claymont, Delaware plant of The Colorado Fuel and Iron Corporation, New York, N.Y.

Prior to joining the company, Mr. Ott was superintendent of the Midvale Company, Philadelphia, Pennsylvania. Previously he was chief metallurgist and assistant to the vice-president of The Penn-Ohio Steel Corporation, Birdsboro. Penn. Prior to that time, he served as vice-president and general sales manager of the Pittsburgh Alloy Corporation, Pittsburgh, Pennsylvania.

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Continental Gin Company, Birmingham, Ala., announces the consolidation of its Special Products Division and Industrial Division. The merged Divisions will be known as the Industrial Division and will be under the direction of George C. Morgan as manager. Ralph Y. MacIntyre, formerly manager of the Industrial Division, has been appointed manager of sales development, a new department of Continental Gin.

---

St. Regis Paper Company, New York, N. Y., announces the appointment of Don R. Russell as sales representative of the Multiwall Packaging Division in the Minneapolis, Minn. office, located at 206 Foshay Tower.

▲ Tournatractor moves in between shovel-swings to clean up spillage and doze blasted stone for easier loading. Shovel cycle is not interrupted, because of rubber-tired tractor's sure-footed speed on uneven pit floor.

Tournatractor handles dozing quickly . . . gets good bladeful of rock, moves about 2½ cubic yards in 30-ft. dozing run. Versatile machine handles many other quarry assignments, pushes in blasted stone, cleans up around stockpiles, pulls other equipment around quarry.

▼

Versatile Tournatractor dozes overburden between cleanup and other assignments. Shovel in background removes 6′ to 10′ of overburden. Tournatractor quickly cleans stone shelf so that production shovels can move in.

▼

# Rubber-tired rig works fast on watery pit floor

A large Ohio quarry, producing 700,000 tons of limestone yearly, uses one rubber-tired Tournatractor to handle all clean-up and pit maintenance. The tractor covers 325 acres . . . maintaining and building haul roads, moving freight cars, pushing in toe of stockpiles, bunching blasted stone, cleaning around shovel.

### 6" of water, no barrier

A few days before these pictures were taken, heavy rains left as much as 6 inches of water on the quarry floor. Rolling easily on its big 21:00 x 25 low-pressure tires, the tractor maneuvered in and out of the watery loading area, handled its assignments quickly.

A major Tournatractor advantage when working in rain and water is that all moving parts in its power train are completely enclosed. They operate in a constant bath of oil, sealed against moisture. Lubricants stay in to prevent corrosion and maintain machine's high-operating efficiency and low-maintenance cost.

### "Beats crawler on rock"

Foreman Bernard Boli said, "Tournatractor has crawler beat all to pieces on rock . . . gets around 1¼-mile quarry easily. Our biggest reason for buying the Tournatractor was speed." And operator Charles A. Slover said, "Tournatractor is a wonderful machine for the operator. It doesn't beat you around like a crawler. Besides lubricating quickly, and being able to move six 45-ton-load cars, I like the ease of riding."

### Perhaps you can use a 208 hp rubber-tired "Quarryman"

To handle widely scattered dozing, pushing, and clean-up assignments, let Tournatractor help you speed operations, save you money. Let us show you owner-verified performance records of Tournatractor on work similar to yours.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-997-Q-b

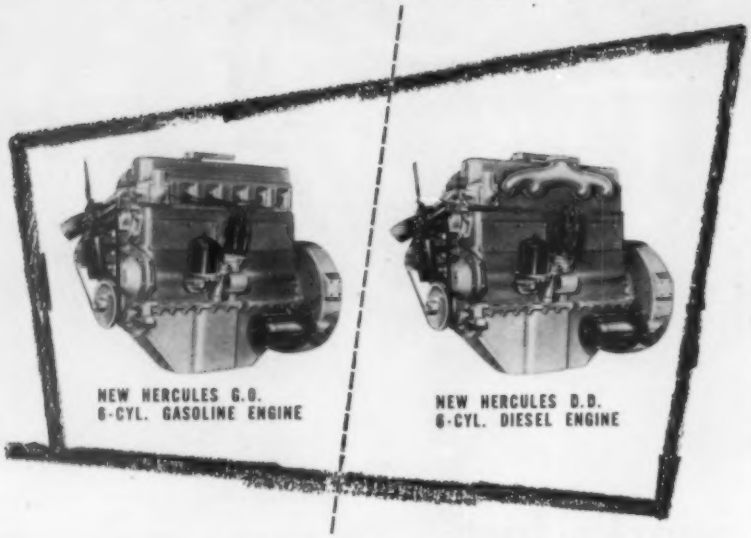
**LeTourneau-WESTINGHOUSE Company**

Peoria, Illinois

*A Subsidiary of Westinghouse Air Brake Company*

# WHEN YOU BUY AN ENGINE

. . . what's the first thing to look for?




Of course, some people look at the "outside" of an engine and see only a nice shiny paint-job. But that's not too important. Other buyers look at what's "inside" an engine. That can be very important. However, we think a buyer should also look at what's "back of" an engine. That's why we at Hercules Motors Corporation guard the enviable reputation we have earned in more than 41 years of engine building experience.

Hercules' reputation isn't merely a way of doing business or just the top quality of our product. We feel that our reputation means more than good business ethics and a quality product. Our reputation also means supplying new and better engines to meet the various needs of our customers.

As an example, our new line of INTERCHANGEABLE engines gives the customer the choice of gasoline or diesel power without changing engine mountings in the end product. These new G.O. (Gasoline Overhead valve) and D.D. (Direct injection Diesel) engines, not only have the same mounting dimensions in engines of the same number of cylinders, but many component parts are also interchangeable over the entire range of these new models.

Years of engine building "know how" stand "back of" every Hercules Engine. In addition, our wide selection of more than 90 models of engines and power units, available for operation on gasoline, diesel fuel, natural gas, L.P.G. and kerosene, provides a dependable source of power for all requirements between 3 and 500 H.P.

For help in solving your power problems, contact our factory. Our sales-engineers will be glad to assist you. No obligation, of course.

## HERCULES MOTORS CORPORATION

CANTON 2, OHIO


George F. Pettinos, Inc., Philadelphia, Pa., announces the association of John D. Smith and William A. Gray III as sales representatives, and Harold J. McCallum as sales service representative.

John D. Smith, formerly associated in a sales capacity with Lehigh Navigation Coal Company, and later with El-Tronics International of Canada, Ltd., will be in the New York State area as sales representative.

William A. Gray III, who will represent the company in the New England area, was formerly connected with Thompson Wire Company, Mattapan, Massachusetts, and the Kawneer Company, in Niles Michigan.

Harold J. McCallum, as sales service representative will act in an advisory capacity with the foundries and salesmen. He was previously with Baldwin Lima Hamilton, where he was Foundry superintendent for fifteen years.

---

J. Ross Castendyck, president, Challenge Manufacturing Co., Los Angeles, Calif., manufacturer of Challenge "Pacemaker" Truck Mixers, has announced that the new Challenge plant in Bryan, Ohio is now in full production.

---

J. W. Bloomquist, Domestic Sales Manager of Euclid Division, General Motors Corporation, Cleveland, Ohio, has announced the appointment of J. H. Ryder Machinery Co., Ltd. as authorized dealer for the Province of Manitoba, Canada. J. H. Ryder is president and William G. Webb is general manager of the company with headquarters at 201 Main Street South in Winnipeg, Manitoba.

---

Southern Gateway Company, Cincinnati, Ohio, now offers sales and parts service on Bucyrus-Erie excavators and cranes in southwestern Ohio, the southeastern tip of Indiana and the northern point of Kentucky, according to an announcement by Bucyrus-Erie Co., South Milwaukee, Wis.

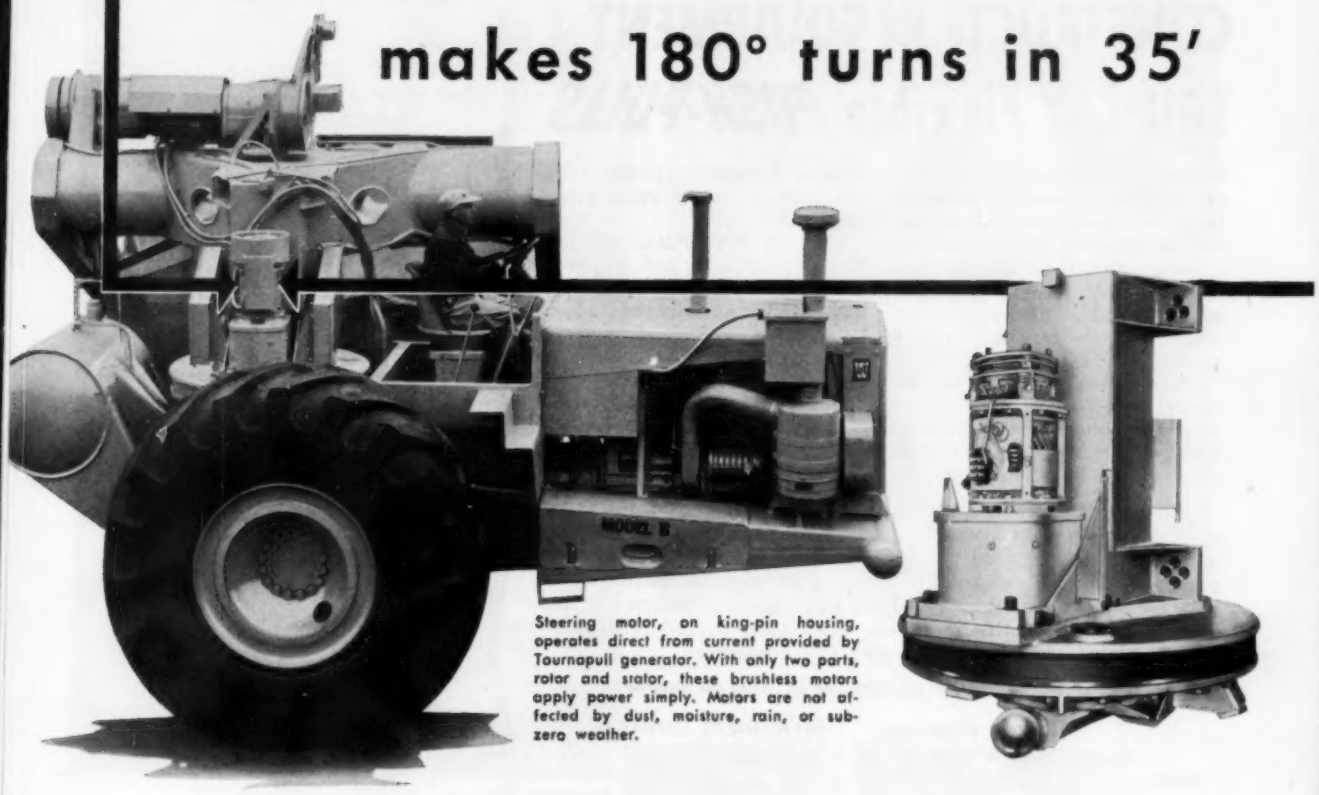
---

John G. Rehm has been appointed sales engineer in the Precipitator Sales Division by Western Precipitation Corporation, Los Angeles, Calif.

For more than three years he has served as a construction engineer with the company, where he gained invaluable field experience in the many technical details of installation and operation of Cottrell Electrical Precipitators.

# BIG 25-yard "B"

## makes 180° turns in 35′



Steering motor, on king-pin housing, operates direct from current provided by Tournapull generator. With only two parts, rotor and stator, these brushless motors apply power simply. Motors are not affected by dust, moisture, rain, or sub-zero weather.

The BIG B Tournapull turns around without backing in a space only 35′ wide... over 5′ less than its 40′6″ over-all length. This 90° turnability lets you work in restricted areas and on narrow fills where other big scrapers cannot operate.

### Maneuvers in close quarters

No steering jacks or other structural parts interfere with "B's" full 90° turns. Positive geared steer on king pin helps to maneuver fast in close quarters. These advantages mean bigger production in less time, and eliminate need for costly construction and maintenance of special turn-around areas needed for other rigs.

### "Feather-touch" steering

Little effort is required to steer the B Tournapull. Electricity does all the work. Operator never has to "fight" steering wheel, no matter how tough the going.

An electric motor mounted on steering king pin turns a heavy-duty ring gear mounted on prime-mover. As ring gear turns, prime-mover pivots on the king pin. Prime-mover continues to turn as long as steering wheel is rotated. The instant this rotation is stopped, a brake automatically locks the steering motor. Tournapull then continues to travel in the selected direction, regardless of underfoot conditions, until wheel is again rotated and action repeated.

### "B" walks out of soft spots

Positive electric power-steer makes it easy to work BIG "B" quickly out of a soft spot. Rotating wheel back and forth causes prime-mover to swing from side to side. This "walks" the drive wheels to fresh footing and moves trailing unit ahead with each swing of the prime-mover.

Why not find out for yourself how the BIG 25-yard B Tournapull, with its mudability and 180° turnability, can help you get bigger pay-yards on your earthmoving. Ask for owner-verified reports on "B" production.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-964-G-b

**LeTourneau-WESTINGHOUSE Company**

Peoria, Illinois

*A Subsidiary of Westinghouse Air Brake Company*

# FOR REMOTE CONTROL JOBS on a great variety of CONSTRUCTION EQUIPMENT

## TRU-LAY *Flexible* *PUSH*-PULLS

• Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers, etc.

On construction equipment these dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and on many other applications.

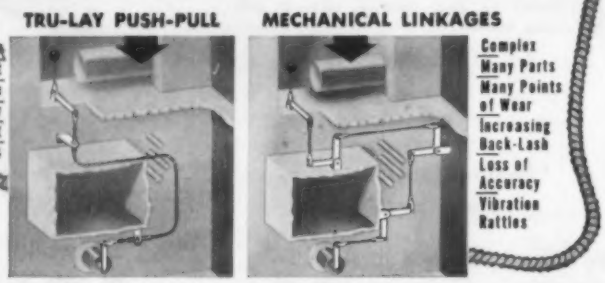
TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances up to 150 feet or more.

• • •

For complete information and details, write for DATA FILE.

"**Solid as a rod but *flexible* as a wire rope**" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

*Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below—*




**TRU-LAY *flexible* PUSH-PULLS are dependable and accurate** even under the most adverse conditions. They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls means the virtual elimination of maintenance.

*Our DATA FILE will answer your further questions*
*Write for a copy without obligation*

Push-Pull DATA FILE

ACCO

AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

601-K Stephenson Bldg., Detroit 2
2216-K South Garfield Ave., Los Angeles 22 • 929-K Connecticut Ave., Bridgeport 2, Conn.


A new 16-mm. sound and color film: "Semi-Automatic *Roadranger* Transmissions" has just been released by Fuller Manufacturing Company Transmission Division, Kalamazoo, Michigan.

The movie is a dramatic driver instruction film, showing the ease of operating Semi-Automatic *Roadranger* Transmissions under all driving conditions.

This newest Fuller movie release describes the operating principles of the Models R-96, R-960, R-46 and R-1150 *Roadrangers*, and employs animated scenes to illustrate these procedures graphically.

This 25-minute film is being distributed free through truck dealers and distributors.

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A new company has been formed in England to manufacture and market Richardson automatic scales and proportioning equipment, according to an announcement from the parent firm, Richardson Scale Co., Clifton, N.J., called Richardson Scale Co., Ltd.

---

J. W. Bloomquist, sales manager of Euclid Division, General Motors Corporation, Cleveland, Ohio, has announced the appointment of Baton Rouge Equipment Co., Inc., 425 North Beck Street, as authorized dealer in southern Louisiana. W. A. Bowers is acting manager of the new Euclid dealership.

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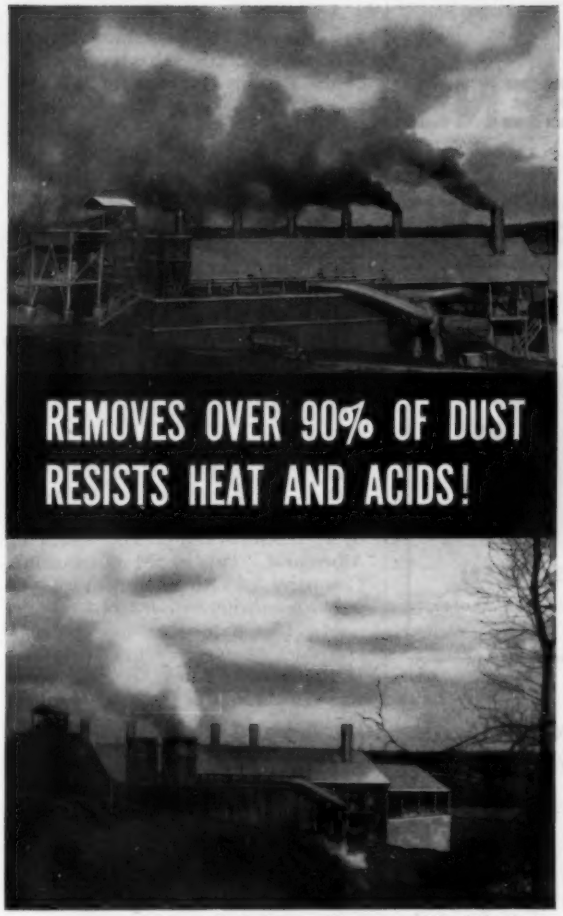
Arthur W. Bollard, formerly vice-president and secretary of the F. D. Cummer & Son Company, Cleveland, Ohio, has joined the Colonial Iron Works Company, also of Cleveland, as general manager of its newly created Bollard Asphalt Plant Division. He has been associated with the Cummer Company for the past 34 years, and was chief engineer for nearly 20 years in charge of all design work and field erection. He was appointed secretary of the company in 1947, and was given the dual post of vice-president in 1948.

---

Dorr-Oliver, Inc., of Stamford Conn., announces the appointment of the Earnshaws Docks and Honolulu Iron Works of Manila as its exclusive representative in the Republic of the Philippines. Earnshaws, which has handled the sale of D-O cane sugar clarifiers for a number of years, will now both market and locally manufacture the complete line of Dorr-Oliver equipment and services for the chemical, metallurgical, sugar, sanitary and other industries in the islands.



# REMOVES OVER 90% OF DUST RESISTS HEAT AND ACIDS!

*New collector in operation—over 90% of the dust in stack effluent eliminated.*

Proved in use, Southern's new wet type dust collector eliminates 90% of atmospheric dust, while resisting heat and acids.

It all started when we set out to manufacture a light weight aggregate for the building industry. Because of excessive heat, corrosive and abrasive action, we faced a tough atmospheric pollution problem: over 50,000 c.f.m. of reddish brown stack effluent was escaping from six stacks. Many dust collectors—including a commercial wet type—were tried, but none lasted more than a few weeks; none could withstand the heat, acids, and corrosion present. Finally Southern experts solved the problem with an all-new wet type collector that removes approximately 50 tons of dust per day.

If your plant faces a difficult atmospheric pollution problem, it will pay you to get the facts on this new collector. Just contact us. We'll be happy to send a representative, or mail the information desired. No obligation, of course.

**SOUTHERN LIGHTWEIGHT AGGREGATE CORPORATION**
**PROCESS ENGINEERING DIVISION, BOX 205 RICHMOND, VA.**

# Keep Tramp Metal Out of Your Crushers

# Protect Profits with the RCA Metal Detector

Installed around your conveyor, the RCA Electronic Metal Detector readily detects those villains that break off and eat up profits in downtime—manganese steel dipper teeth (which no magnet can dislodge), drill bits, tool steel parts.

**PREVENTS TROUBLE**—The Electronic Detector is on the job, every moment of the time, probing out tramp metal, both magnetic and non-magnetic. Wired to sound an alarm, spray-mark metal area, or stop a conveyor when trouble threatens, it prevents tough metal fragments from causing damage to the crushers later on.

No more burning out wedged tramp metal or replacing shafts damaged by stray metal parts. With the RCA Metal Detector in operation, these threats to production can be eliminated.

**PAYS FOR ITSELF**—By reducing downtime and production losses, and saving high-cost machinery replacements, the RCA Metal Detector protects profits and quickly pays for itself!

MARK OF RCA QUALITY

ELECTRONIC

## METAL DETECTOR

***RADIO CORPORATION of AMERICA***
*Dept. F-236, Building 15-1, Camden, N. J.*
*In Canada: RCA VICTOR Company Limited, Montreal*

☐ Please send me complete information on RCA Metal Detector for use in quarrying and mining.

☐ Have RCA field representative contact me.

NAME_____ TITLE_____

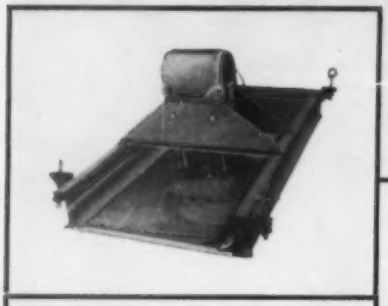
COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

SYNTRON

# VIBRATING SCREENS

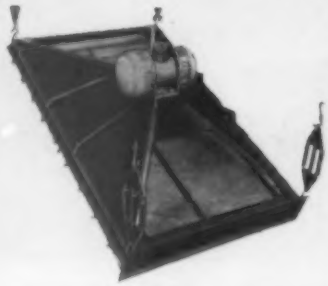


**ELECTROMAGNETIC VIBRATING SCREEN**

**Heavy-duty for screening, sizing**

**GRIZZLY BAR SCREEN**

**Heavy tonnage scalping or coarse sizing**



**SINEX SCREEN**

**Fast, accurate sizing or dewatering**

***are built for fast, accurate screening***

Syntron has a complete line of screens for low cost fast operation—for feeding and scalping, coarse or fine screening, dedusting, dewatering, desilting, desludging.

The unique action of the electromagnetic and electromechanical drives make use of the entire screen area, helps maintain high production rates. Screens available in many models and sizes.

***Other Syntron Equipment of proven dependable Quality***

**TEST SIEVE SHAKER**

**FLOW CONTROL VALVES**

**HOPPER LEVEL SWITCH**

**ROCK DRILL**

*Write today for complete catalogue data—FREE*

**SYNTRON COMPANY**

385 Carson Avenue Homer City, Penna.


Appointment of John J. Harvey and Eugene H. Nelson as factory sales representatives has been made by the Parsons Company of Newton, Iowa, subsidiary of the Koehring Company of Milwaukee, Wis.

Both of the newly appointed sales representatives are well versed in the construction equipment field. Mr. Harvey has been associated with the Parsons Company for more than six years, the majority of the time as a field service engineer. Before that he worked with an engineering firm in Iowa.

Mr. Nelson joined the Parsons Company in 1955 after doing sales and service work in Utah.

J. R. Clements has been appointed vice-president and general sales manager of the Raymond Bag Corporation, according to an announcement by F. D. Gottwald, president of The Albemarle Paper Manufacturing Company of Richmond, Virginia, parent company of Raymond.

Mr. Clements was formerly general sales manager of the Multiwall Bag Division of Albemarle. Raymond Bag Corporation is the newly formed Division of Albemarle following their purchase of the old Raymond Bag Company of Middletown, Ohio.

Donald B. McClelland, Rudolph J. Ramstack and William D. Reuter have been assigned as sales representatives to the Detroit, Duluth and Columbus district offices, respectively, of Allis-Chalmers Industries Group, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

James M. Veeder, assistant manager, finance department of Koppers Company, Inc., Pittsburgh, Pa., since 1946, has been named vice-president and manager of the department.

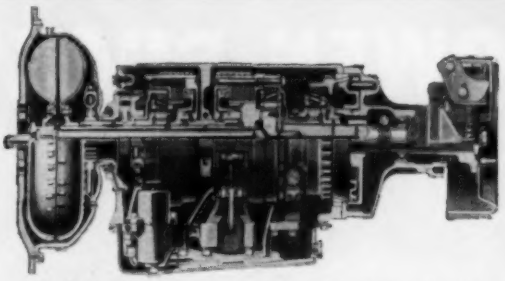
E. A. Berry, who has been vice-president and manager of the finance department, has been appointed to the position of assistant to the president.

Charles G. Strang, who has been an assistant vice-president in the finance department, also has been appointed vice-president and assistant manager, finance department.

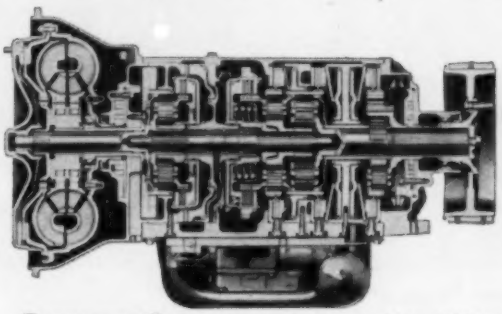
Mr. Strang will continue to be in charge of all the company's financial relations, and also continue to serve as manager of finance administration, a position he has held since 1952. He is a native of Punxsutawney and a graduate of Penn State University. Before joining Koppers in 1947, Mr. Strang had been associated for 10 years with the Mellon Securities Corporation of Pittsburgh, which later was merged with the First Boston Corporation.

# Now there's a great automatic transmission for whichever Chevy truck you choose

**Famous Chevrolet *Hydra-Matic*, or all-new *Powermatic*, provides easy, safe automatic driving that's tailored for your truck!**



***Hydra-Matic***—optional in Series 3000 and 4000 models at extra cost—brings new ease to tough jobs, cuts hauling time and maintenance expense.



***Powermatic***—optional in Series 5000-10000 models at extra cost—assures the easiest, safest big-truck operation ever known! It's a Chevrolet "first."

Pick *any* Chevrolet truck . . . and you'll find there's a modern automatic transmission to make your hauling easier, safer, and more profitable!

If your choice is a Series 3000 or 4000 model, there's ***Hydra-Matic.*** This modern automatic transmission not only gives you the ease of no-shift hauling . . . it also *saves you maintenance money* because the hydraulic coupling protects drive-line parts from shock loads. Or, if your job calls for a 5000 through 10000 Series Chevy, there's exclusive ***Powermatic***—the first automatic transmission designed especially for big trucks! Six fully automatic forward speeds and a torque converter virtually eliminate manual gear shifting on hills or in traffic! A revolutionary "retarder" assures safer down-hill hauling, less brake wear and you make better time through traffic because all shifts are "power-on" shifts!

Now *automatic driving*, available throughout the Chevrolet truck line, gives you one more reason to see your Chevy dealer soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Chevrolet truck manual transmissions are great performers, too!**

To give you extra pulling power in the medium- or heavy-duty model you select, Chevrolet trucks provide big, rugged heavy-duty 4-speed Synchro-Mesh transmissions, or brand-new "New Process" 5-speed transmissions!*

**Optional at extra cost in 5000-6000 through 8000 Series models, standard in 9000-10000 Series models.*

CHEVROLET

# NEW CHEVROLET TASK·FORCE TRUCKS

*Anything less is an old-fashioned truck!*

# OWEN BUCKETS

*Reduced Costs in Countless Hopper Operations*

*Photo Courtesy of Thew Shovel Co.*

*Photo Courtesy of Link Belt Co.*

*"A mouthful at every bite"*

*Write for the Owen Catalog...*

**THE OWEN BUCKET CO.**

6050 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.


A. M. Donze, vice-president of production of The Timken Roller Bearing Company, has announced the appointment of James Freese as general production manager of all plants, and Charles L. Richey, assistant general production manager.

Mr. Freese started with Timken in 1929 as a production clerk. In 1937 he was promoted to assistant production manager of the Steel and Tube Division, and in 1942 to the position of manager of production of the Steel and Tube Division. In 1953 he was named assistant general production manager of all plants, which post he held until his recent appointment as general production manager. He succeeds James Reid, retired.

Succeeding Mr. Freese as assistant general manager of production is Charles L. Richey, who started as an inspector with the Timken Company in 1934, and was successively an assistant foreman, a scheduler expeditor, assistant to the production manager, and production manager of the Canton Bearing Division, which post he held until his appointment as assistant general production manager of all Timken plants.

---

William C. Weirath has been appointed assistant manager of commercial sales for the General Tire & Rubber Company, Akron, Ohio. He will assist Karl A. Dalsky, commercial sales manager, in directing the sales of truck and other commercially used tires for the company. Formerly manager of Kraft sales and service, he will continue to headquarter in Akron.

---

Arthur G. Portz has been named superintendent of the heat treat department of Le Roi's Rock Drill Plant at Cleveland, Ohio. He comes to Le Roi with 15 years of experience in heat treating and metallurgy and is the author of several technical articles appearing in recent issues of metal trade publications.

---

Carl Joseph Murray has been appointed works manager of the Buffalo, New York, plant of the Colorado Fuel & Iron Corporation's Wickwire Spencer Steel Division. He has been associated with the Jessop Steel Company in Washington, Pa., the Crucible Steel Company in Syracuse, N. Y., and the Lamson Company, Syracuse, N. Y.

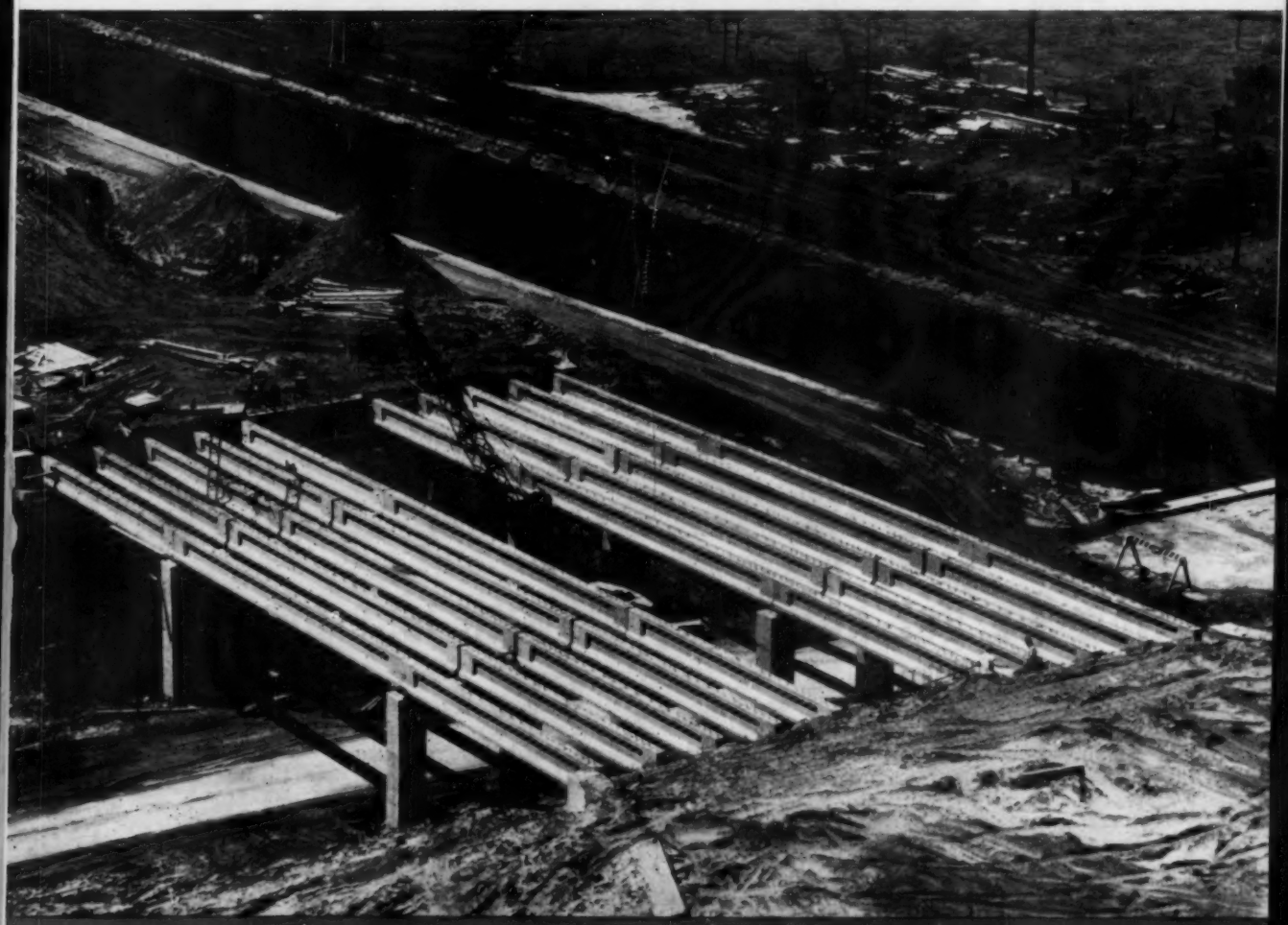
Also announced is the appointment of Vincent G. Galvin as superintendent of industrial relations at the Buffalo plant. He was formerly a staff member for Howard J. Jones, CF&I's manager of industrial relations, and has been associated with CF&I since 1953.

*For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete*

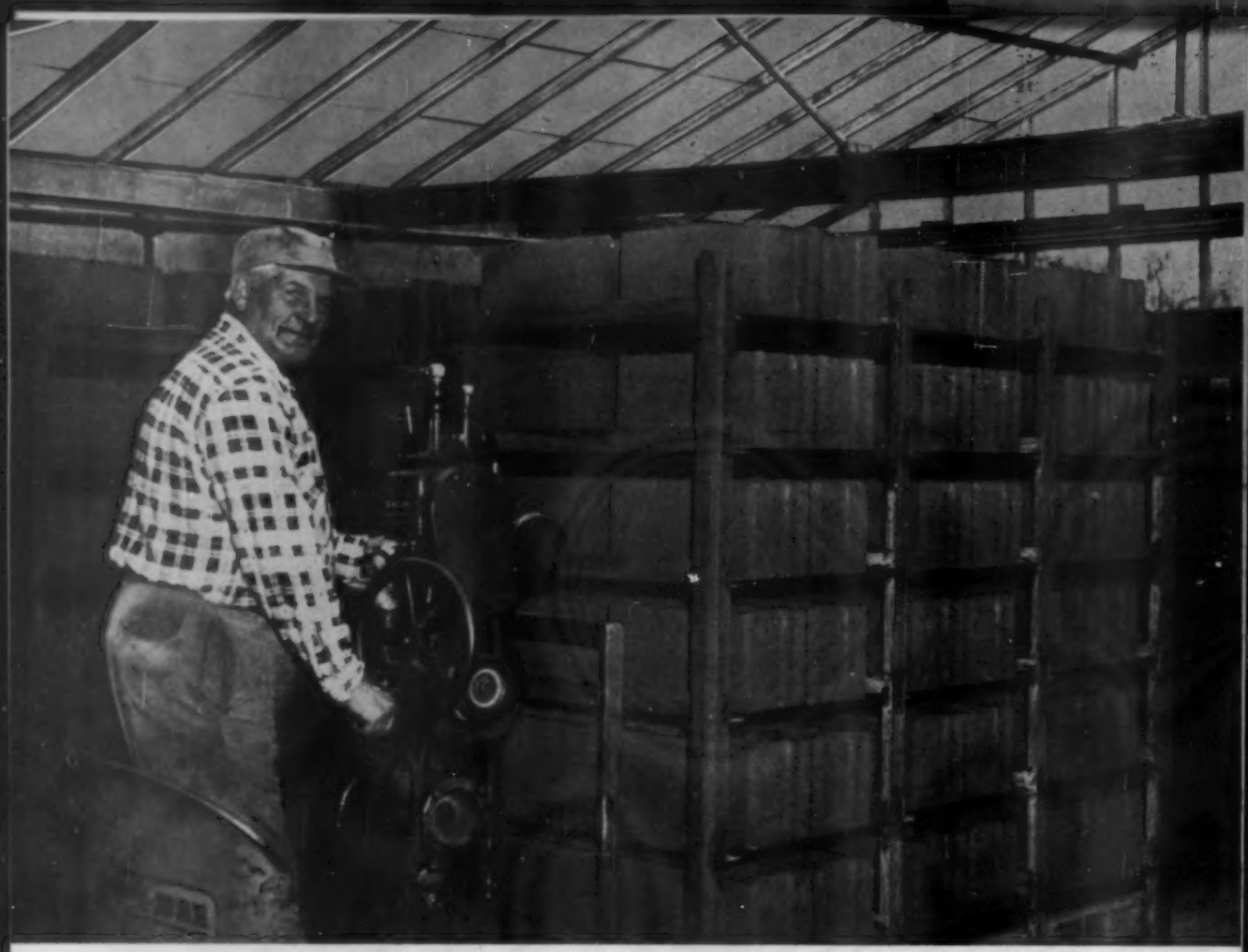
JUNE 1956

# THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



Typical Installation of Prestressed Concrete I-Beams on Florida Turnpike Construction. (See Page 216.)



**CONCRETE PRODUCTS** made with Atlas Duraplastic cement in solar heated curing house at Kubach Concrete & Cinder Block Plant, Islip, N. Y.

# "Now we get better block—with less breakage"

"We've increased our production, and reduced costly breakage, by making our block with Atlas Duraplastic* cement," says William Kubach, owner of Kubach Concrete & Cinder Block Plant, Islip, New York.

Mr. Kubach is one of many concrete product manufacturers who use Atlas Duraplastic air-entraining portland cement to give better-looking, *better-selling* block. That's because Duraplastic-made mixes help give block clean, true edges, more uniform dimensions, and the desired face texture. The results are greater sales appeal and greater satisfaction from customers. Yet Duraplastic provides these advantages at no extra cost... requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For free descriptive booklet, write:

**UNIVERSAL ATLAS CEMENT COMPANY**

UNITED STATES STEEL CORPORATION SUBSIDIARY

100 PARK AVENUE, NEW YORK 17, N. Y.

*Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee*
*Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

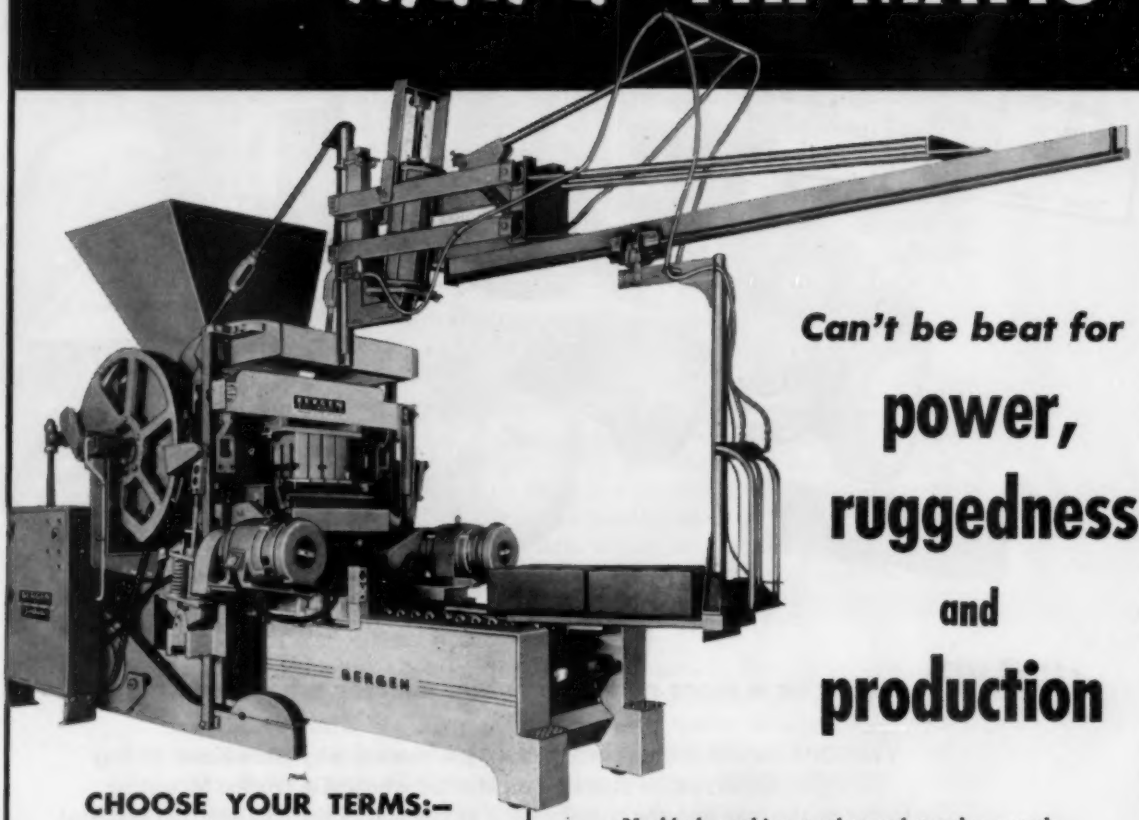
**AIR-ENTRAINING PORTLAND** D-183

# Atlas® Duraplastic Cement

**MAKES SUPERIOR CONCRETE PRODUCTS AT NO EXTRA COST**

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.

# NO BETTER Block Machine than a TRI-MATIC




***Can't be beat for***

**power, ruggedness and production**

**CHOOSE YOUR TERMS:–**

**1. CASH**

**2. TIME PAYMENTS**

**3. "LEASE-WITH-OPTION-TO-BUY" CONTRACT**

(NON-ROYALTY, FIXED MONTHLY PAYMENT)

No block machine on the market today exceeds the TRI-MATIC for the essential features of heavy-duty construction, designed for and producing the finest block at maximum speed.

If you want high production, Tri-Matic is designed to run without strain at rates up to 6 mold cycles per minute, yielding an average of 10,000 — 8" equivalent units per typical 10 hour day. If you want power and ruggedness, just check the size of all motors, shafts, pulleys, etc. . . . AND — not one ounce of quality workmanship or material is sacrificed ANYWHERE on a TRI-MATIC.

Compare a TRI-MATIC WITH ANY MACHINE ON THE MARKET—you'll see why the BERGEN TRI-MATIC can't be beat!

**BERGEN**
MACHINE & TOOL CO., INC.

**NUTLEY, NEW JERSEY**

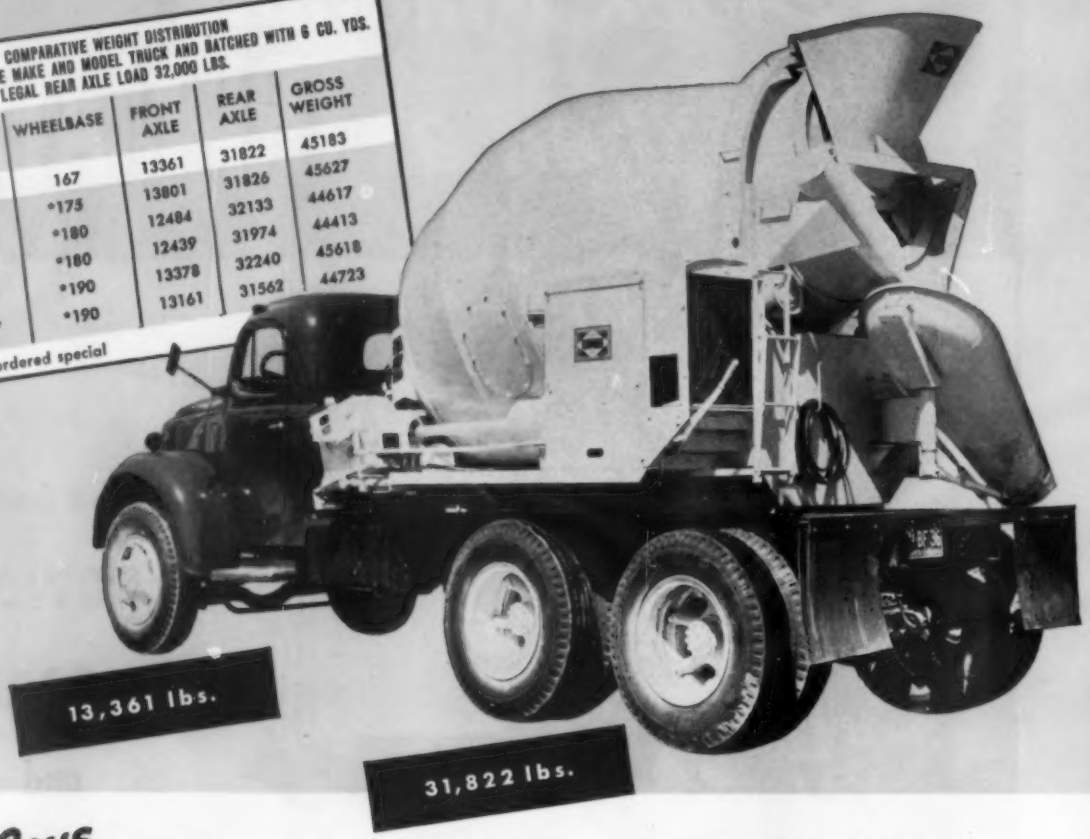
Cable Address: "BERGENCO" (Nutley, N. J.)

## *Compare* BLAW-KNOX TRUKMIXERS *with ordinary truck mixers for better weight distribution on* SHORTER WHEELBASE TRUCKS

COMPARATIVE WEIGHT DISTRIBUTION
ALL MIXERS ON SAME MAKE AND MODEL TRUCK AND BATCHED WITH 6 CU. YDS.
LEGAL REAR AXLE LOAD 32,000 LBS.

| LOAD ON THE ROAD | WHEELBASE | FRONT AXLE | REAR AXLE | GROSS WEIGHT |
|---|---|---|---|---|
| BLAW-KNOX | 167 | 13361 | 31822 | 45183 |
| MIXER "A" | *175 | 13801 | 31826 | 45627 |
| MIXER "B" | *180 | 12484 | 32133 | 44617 |
| MIXER "C" | *180 | 12439 | 31974 | 44413 |
| MIXER "D" | *190 | 13378 | 32240 | 45618 |
| MIXER "E" | *190 | 13161 | 31562 | 44723 |

*Must be ordered special




### *Hi-Boys* mount on a more maneuverable, shorter wheelbase truck

WHEN YOU STUDY the table above you can see why Blaw-Knox Hi-Boy TRUKMIXERS can be mounted on shorter wheelbase trucks. Mounting the motor at the rear and the transmission at the end of the combination pedestal water tank, permits center of weight to be moved 20″ forward and shortens the overall length. This gives better weight distribution with more weight on front axle so you can carry bigger *legal* payload.

Another Hi-Boy feature that assures better weight distribution and most efficient mixing is the larger diameter drum that mixes even zero slump concrete quickly and keeps the batch weight at the front of the mixer. Pedestal and flush water tanks are also combined to reduce weight by approximately half a ton and lower the center of gravity of the unit. There are dozens of other practical, profitable features in these units you will want to investigate. Call your Blaw-Knox distributor today.

50th Anniversary BLAW-KNOX 1906–1956

## BLAW-KNOX COMPANY

**CONSTRUCTION EQUIPMENT DIVISION**
**35 Charleston Avenue**
**Mattoon, Illinois**

The CONCRETE MANUFACTURER

June 1956

# A Boy Comes of Age

PARTICULARLY in Florida, prestressed concrete has seemingly come into its own. In that state, where a low terrain with flat slopes and broad flood plains, crossed by numerous waterways, predominates, the long bridge, bullt of identical short-span, simply supported trestle units, is especially practicable. The twin-Tee, or channel-type floor or roof slab is equally adaptable for the large-area, one-story modern residences, schools, stores, and industrial structures which are rapidly covering the available building areas.

Two important factors contributing to the greatly increased use of concrete in Florida are the relatively high cost of structural steel and the comparatively plentiful supply of satisfactory concrete aggregates and portland cement. A final influencing factor is a confidence born of exacting experience on the part of construction agency officials, in the art of prestressing concrete.

We have just returned from a meeting in Florida of some 400 engineers, producers, and others from all parts of this country, who are interested in prestressing. Unbounded enthusiasm for the future prevailed at this meeting. We were particularly impressed by the sincerity and capabilities of the speakers, by the close attention the audiences paid to their statements, by the spirited and intelligent discussions ensuing, and by the scope of the informative data which was made available. A state highway official at this meeting declared that prestressed concrete beams will be the basic material to be bid on in future crossovers on the new state toll highways.

Much of the knowledge gained by experience in Florida can be turned into useful production in other parts of this country not blessed by such favorable conditions. This only requires a wider dissemination of the data already established by competent research and experience, to effect everywhere a more efficient structural concrete, coupled with architectural beauty of structure. While prestressing has progressed further in Florida, the basic principles of its relative worth and economy can be applied everywhere.

No one who is interested in any phase of concrete construction can visit Florida without quickly realizing that this new era in concrete is here to stay and expand, its products eventually to supplant much of what has gone before. It is readily understandable that there will be disagreement as to design criteria, method application, and installation procedure, as change is the price of progress. What is most important is that all who have a hand in his upbringing recognize that the young man, prestressed concrete, has within the last half-decade attained his manhood, and that his future is indeed bright.

Roy L. Peck

This is the 131st of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

# Another BESSER BOOSTER

## Husband and Wife Team Builds Successful Block Business in Detroit Area with VIBRAPACS

The history of Concrete Block & Products Company, Detroit, Michigan, has all the aspects of a typical Horatio Alger success story. This time, however, the hero is a husband and wife team, Mr. and Mrs. Walter A. Kurtz.

In 1937, the company employed only seven people and operated two trucks. Sales amounted to approximately $140,000. Today the company has more than one hundred employees, operates 40 trucks and the sales volume has been boosted to almost two million dollars. Much of their phenomenal success can be attributed to the energetic personality of Mrs. Kurtz, who takes an unusually active part in the management of the firm. They say Mrs. Kurtz would rather go shopping for a new truck than a mink coat.

Another factor in the company's success is the exclusive use of Besser Vibrapacs in producing quality block. A Besser machine was installed when the company was organized in 1924, and the Kurtz team stuck to Besser in all the ensuing years. A front pallet feed Vibrapac was installed in September, 1955. As Mrs. Kurtz puts it, *"It is our opinion that the Besser Vibrapac gives the best service obtainable".*

Why don't you, too, team up with Besser for greater production of high quality block. Ask a Besser representative for literature, or write:

**BESSER COMPANY**
*Complete Equipment for Concrete Block Plants*
BOX 131, ALPENA, MICH., U.S.A.

Mrs. Kurtz conferring with husband Walter Kurtz. Both have been active in the business since the company's inception.

Besser Vibrapac in Concrete Block & Products Company plant. Off-bearer has just removed green block with power hoist. No manual lifting.

Stockpiles of aggregate and sand at River Rouge dock owned by Concrete Block & Products Company. Conveyors bring materials through tunnels from heart of pile.

Exterior view of Martin Avenue plant. A second plant, on a 7½ acre site, was acquired about a year ago.

BESSER VIBRAPAC

*first* in concrete block machines

A 8774-1PBC

# News of the Concrete Industries

## Trends and Improvements In High Pressure Curing Discussed at N.C.C.P. Assn.

This is the subject of a paper to be presented by William J. Shore of New York, before the meeting of the National Cinder Concrete Products Association, to be held at Atlantic City, N. J., July 30 to August 1, 1956. The paper will cover present tendencies in the design of autoclaves, doors, and gaskets; cement economies; disposal of steam; use of condensate, fly ash, and silica flour; number of cycles of operation per day; and loading ramps.

Mr. Shore will also discuss the matter of corrosion of metallic elements in high-pressure steam curing. He will also suggest possible approaches to the elimination of this costly and trying problem, which has been a deterrent to the use of high-pressure curing of blocks made with aggregates containing abnormally high amounts of sulphur in active form. The paper promises to present some interesting aspects, in view of the experience Mr. Shore has had in the design of curing equipment.

## Houdaille Industries, Inc. Acquires N. J. Concrete Firm

Houdaille Industries, Inc., Buffalo, N. Y., has purchased the Commonwealth Concrete Company, which operates plants in New Jersey and Pennsylvania.

Houdaille's president, Ralph F. Peo, announced that his firm has bought all the outstanding stock of Commonwealth, which prepares and transports concrete. Commonwealth has a fleet of 98 mix trucks, the largest in New Jersey.

## Hyster Co. Expands Plants At Peoria and Danville, Ill.

Hyster Company, manufacturer of industrial lift trucks and tractor equipment, will construct a new plant comprising several additional factory units, in Danville, Ill., according to a recent announcement by Eugene Caldwell, vice-president and general manager. In addition to this expansion of the ten-year-old facilities, the company will also erect a $150,000 factory addition to its plant in Peoria, Ill., which will add approximately 25,000 sq. ft. to that plant. This new addition will be completed in November of this year.

Both expansions are planned to add considerably to the extensive output of lift trucks, material handling attachments, mobile cranes and tractor equipment which is produced in the two plants. Other facilities of Hyster are established at Portland, Ore., and Nijmegen, The Netherlands.

## Expansion Program Completed Texcrete Holds Open House

Completion of a nine-month expansion program at the Texcrete plant of Texas Industries, Inc., Dallas, Tex., will increase the capacity of Texas Industries plants in Texas and Louisiana to more than 25,000,000 masonry units a year. More than 1,000 architects, engineers, and other members of the industry attended an open house on May 18 which marked the completion of the project.

The plant expansion included installation of four new electronically controlled autoclaves, addition of the latest high-speed production equipment, and doubling the company's central research laboratory facilities.

## U. of N. M. Receives Grant For Studies on Prestressing

The University of New Mexico has received a $10,200 grant from the National Science Foundation for a research project concerning the strength of prestressed concrete beams.

Dr. Eugene M. Zwoyer, an authority in the field of concrete beam techniques, will direct the research. The grant will be used to employ graduate assistants, to conduct the tests, and to record the results.

## *Coming Events*

*June 19-20, 1956—Cleveland.* Annual meeting, Ohio Ready Mixed Concrete Association. Hollenden Hotel.

*October 22-26, 1956—Chicago.* 44th National Safety Congress and Exposition. Conrad Hilton, Congress, Morrison, and La Salle hotels.

## Ohio Ready-Mix Plant Has Insured Water Supply For All-Year Operation

Boardman Supply Company, ready-mixed concrete plant near Youngstown, Ohio, begins each operating day with the entire day's water requirements stored for discharge into its weigh-batcher. A well-planned water pumping and storage system provides all water for batching and for pressure-cleaning truck mixers.

To prevent local water shortages from curtailing operations, Boardman drilled a well and installed its own water supply system. Two water storage tanks, of 7,000-gal. and 3,000-gal. capacity, store a whole day's supply of water. Located on the second floor control level of the batch plant, the tanks feed directly into the batcher.

A Deming 3-hp. centrifugal pump rated to deliver 200 g.p.m. fills the batcher from the tanks. It is operated from the batcher control panel. A Deming vertical turbine, installed in the 180-ft. well near the plant, refills the storage tanks as the water is used. Floatless electrode controls start the deep-well pump when the water level drops in the tanks; the pump stops when they are refilled.

During the winter months, water in the 3,000-gal. tank circulates through a heating unit and is delivered to mixers at about 160 deg. F. The warm water, with the calcium chloride added to the mix, prevents freezing of sand and other materials and assures uniformly-mixed concrete even in cold weather.

The company also uses its abundant water supply to keep its fleet of truck mixers free of dried cement. A 20-hp. Deming vertical turbine pump delivers water from 150 p.s.i. from the storage tanks to truck washing stalls 100 yd. away. Operators clean their trucks after completing each day's scheduled deliveries.

Before installation of this pump, the truck washing stalls were fed by a low-pressure extension line of the city water department. The present system provides three times as much pressure. Under the present set up, the dry mix plant will operate despite local water shortages; there will always be an emergency water supply.

Elastizell®
... the perfect answer to the residential slab-on-grade problem!

Parquet wood flooring on Elastizell-type concrete slab

Concrete made with this material is ...

● HIGHLY MOISTURE-RESISTANT

Elastizell-type slab is dry. On it can be used any kind of floor covering—cork or rubber tile, linoleum, parquet-type wood flooring, wall-to-wall carpeting!

● SELF-INSULATING

Elastizell-type slab, with its "warm-to-the-touch" feel, permits maximum performance of whatever the heating system. Hence, floor-to-ceiling living comfort!

AMONG OTHER USES OF ELASTIZELL-TYPE CONCRETE ...

- as light weight, easy-to-handle floor fills in multi-storied construction.
- as light weight, insulating roof fills.
- as light weight structural members.
- as insulation for underground pipe lines.
- as precast slabs and panels.

Write, wire or 'phone...

ELASTIZELL CORPORATION OF AMERICA
158 FLETCHER STREET • ALPENA, MICHIGAN
'PHONE 1080

# N. Y. Trade Safety Groups Stress "Safety in Unity"

Trade safety groups in New York State are demonstrating that two heads are better than one, and that still more heads are even better, where plant safety is concerned. Participating National Concrete Masonry Association members have recently realized savings up to 45 percent in their workmen's compensation insurance premiums.

Co-operation among related industries in the interest of plant accident prevention is provided for and encouraged, in the New York Workmen's Compensation Law, but the objectives could apply elsewhere.

Basically the New York plan is simple. A group of plant owners engaged in similar plant operations organize into a safety group. Rules and regulations are formulated, and an election of executive offiers is held. (In New York rules and regulations are provided by the State Insurance Fund.) An insurance service agency is then selected to serve as the group's manager, and a single insurance carrier underwrites the group as a whole. Typical group objectives are:

1. The prevention of occupational accidents and diseases by the formulation and conduct of a sound safety program.
2. The provision of improved employee medical care.
3. The reduction in cost of workmen's compensation insurance to safety group members.

The appointed group manager assumes a key position in the success of the plan. Working with a safety advisory committee, comprised of group members, he promulgates rules and regulations for an accident prevention program, conducts safety inspections, keeps detailed records, and analyzes all accidents occurring in the group; he also serves as the group's representative in all matters involving claims, accident investigations, and underwriting problems.

The effectiveness of these New York groups is shown in the premium refund made at the completion of each fiscal year. Past premium returns for a certain length of time for two such groups, in which N.C.M.A. participates are given below.

These figures well substantiate the N.C.M.A. accident prevention committee's contention that concrete block plant safety is worthy of serious and immediate attention. There are few members who wouldn't welcome such refunds as mentioned herein in connection with their workmen's compensation insurance cost. The New York safety groups have shown the way. The rest is up to us. (This release was issued as Safety Bulletin No. 7 by the National Concrete Masonry Association.)

| Group Year | Cement Product Manufacturers Trade Safety Group No. 425 Dividend | Mineral Aggregates Trade Safety Group No. 85 Dividend |
|---|---|---|
| 1948-1949 | 25% | — |
| 1949-1950 | 15% | 30% |
| 1950-1951 | 20% | 27½% |
| 1951-1952 | 25% | 22½% |
| 1952-1953 | 25% | 25% |
| 1953-1954 | 35% | 32½% |
| 1954-1955 | | 32½% |

## Tilt-Up Construction Manual Covers History, Methods

The fourth edition of the *Manual of Tilt-up Construction*, recently published by F. Thomas Collins & Associates, contains such subjects as a review of the history of tilt-up construction, methods of flat-cast versus thin-shell, bond breaking, construction schedules, forms, panel fabrication, erection costs, and sandwich-type panel construction.

This book can be obtained by writing to the publisher at P. O. Box 208, San Gabriel, Calif. The price is $12.50, and discounts are offered to schools, libraries, and booksellers.

## International Symposium Held On Concreting in Winter

At a symposium on winter concreting held in February in Copenhagen, Denmark, 270 concrete technologists from 22 countries discussed many aspects of their work.

The seven-day meeting was arranged by the Danish section of an international research organization. Participants in the discussions numbered approximately 70, and representatives from 12 nations contributed preprints of papers.

These topics were discussed: importance of climatic conditions; influence of temperature on development of strength and frost resistance of concrete; qualities of green concrete; and winter concreting.

## Lightweight Ceramic Unit Created at Illinois Tech On Concrete Block Machine

Recently publicized in the Chicago newspapers is a lightweight ceramic block—molded on concrete block machines—which was developed by the Armour Research Foundation of Illinois Institute of Technology. The 22-lb. three-cored 8- by 8- by 16-in. unit has been produced experimentally from Chicago-area shale or clay aggregate. It can be given a color glaze ranging from buff to dark maroon, according to Dr. E. H. Schulz, assistant director of the Institute.

Dr. Schulz explained that the new all-clay construction block, fired in a furnace after molding, as are other clay products, has great stability and is less likely to expand or contract under moisture changes than its concrete counterpart. Color of the unit, uniform throughout the block section, will vary according to the materials from which it is made. He believes that its acoustical and heat insulative properties, as well as structural strength, will equal those of the well known concrete unit, and that if produced commercially, its cost should be comparable to the expense of producing a concrete block.

(Note to concrete block producers: The report indicates that our competition at least appreciates a good form for this new masonry unit. High-quality claims are made here. We should watch with interest the progress it makes in the future.—EDITOR.)

New ceramic block being removed from mold box, ready to be fired. See the accompanying text for a description of the process.

## Sound Absorption Needs Met In Coarse-Textured Blocks

Reduction of noise within buildings, with a view to increasing the efficiency and comfort of the occupants, is today receiving increased attention from architects, sound engineers, and builders. Recent tests have proved that concrete masonry units having open-surface textures will absorb sound readily.

Sound waves, upon striking a surface, are partially reflected, absorbed, and transmitted in varying amounts, depending upon the character of the surface. Transmission of sound *through* a wall or partition involves other considerations than are presented here; and only the sound reflective and absorptive characteristics of the materials will be discussed.

A smooth, dense surface such as hard plaster or glass, tests have proved, will absorb only about 3 percent of the sound that strikes it. Exposed concrete masonry walls built with the ordinary commercial run of block will absorb between 18 percent if constructed of a very dense and smooth concrete block made of sand and gravel aggregates, and 68 percent if made of very coarse textured lightweight block. Recent innovations in the use of special aggregates and manufacturing processes have produced even higher absorptions, while maintaining the minimum load-bearing attributes of the units used in a partition wall.

Material which will absorb 15 percent or more of the impinging sound is considered useful for sound control. Careful control of the gradation of the aggregates making up the block, of the amount of water used in the mixture, and of the degree of compaction at the time of molding, all have a bearing on the surface texture of concrete block, affecting their sound-absorption capabilities.

Paint applied to concrete masonry tends to close the surface pores of the exposed block and thus reduces its value for sound control. Spray painting has less effect in closing these pores than has brush painting. However, relatively the same effects can be achieved with brush painting, provided that the brushes used have stiff bristles, which will not fill the pores of the surface with hard paint. The degree of sound absorption of a surface which is painted varies with the consistency of the paint applied. Heavy coats of thick paint render the surface—almost regardless of its texture—very low in absorption.

There has been an upsurge of interest among those planning institutional buildings, schools, hotels, apartments, and commercial buildings, to provide facilities most suitable for those who are to occupy the building. Studies made of learning aptitudes of school children have shown, for example, that it is possible for young students to absorb their instruction more readily when recurrent sounds within the room are highly absorbed.

That is one reason why concrete masonry walls are being increasingly used in modern school construction, and why other institutional buildings,

### *Equipment Cleaning Hints For Concrete Manufacturers*

Almost every maintenance man has his own pet cleaning methods. Here are some recommendations:

(1) For quickly removing stubborn deposits of grease, road oils, tar, use high-pressure steam cleaning, 150-200 p.s.i. and up to 325 deg. F. coil temperature.

(2) For removing common dirt, mud and clay, use high-pressure cold water to 400 p.s.i. and 5 to 15 g.p.m.

(3) Where mud and dirt are impregnated with oil and grease or where there are light deposits of grease and oil, and also for quick deicing, use high-pressure hot water to 400 p.s.i. and 5 to 10 g.p.m.

(4) For hand-washing trucks and equipment, use low-pressure warm water, 3 to 15 g.p.m. at 120-200 deg. F.

(5) Pre-soak dirt and grease with a diesel-oil-emulsion spray. This loosens the dirt so it usually can be blasted off by high-pressure hot water alone. Thus, both chemical and time are saved. It is also easier on paint.

(6) To strip paint down to the metal, first spray or wash the painted surface with a paint stripper. Wait a few minutes for the paint to peel up and wrinkle, then wash off with a hot solution from the steam cleaner.

*Quality Guaranteed*

# MASONRY REINFORCING

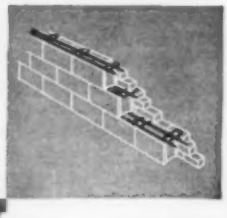
FOR SOLID WALLS

## ECONO-LOK* . . .

**Specifically designed for brick walls with concrete masonry back-up.**

- Eliminates moisture conducting brick header courses (where code permits)
- Ties inner wythe to outer wythe
- Reinforces concrete masonry
- Permits flexibility of design
- Packaged for identification and protection

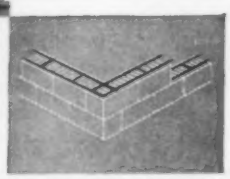
Made in 12-ft. lengths from all #9 ga. or all 3/16" high tensile steel wire with U-Ties flush welded 16" center to center.



## BLOK-LOK . . .

**Flush welded at cross ties for greater strength.**

- Small masonry joint
- Maximum structural strength (tension tested by Columbia University)
- No obstruction to mechanical trades
- Minimum job breakage
- Packaged for identification and protection



Available in 10-ft or 12-ft. lengths; in various gauges and finishes.

**FAMOUS FLUSH WELD**

Designed and tested to required standards. Extensive testing laboratory reports serve to confirm the sound engineering of BLOK-LOK's design.

**BUNDLE WRAPPERS**

Plainly printed to identify type and size.

*Pat. Pend.
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AA Wire Products

AA WIRE PRODUCTS COMPANY

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Phone: RAdcliffe 3-8313

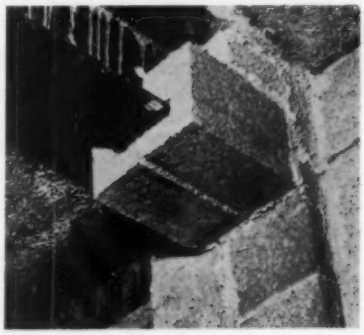
*WORLD'S FOREMOST PRODUCER OF MASONRY REINFORCING*


particularly those in which the absence of noise is an important factor, are also making greater use of concrete block for this purpose. When it is possible to obtain load-bearing wall requirements and at the same time adequate sound absorption in the surface of the units composing the walls, as with concrete masonry of coarse texture, the ideal material has been found.

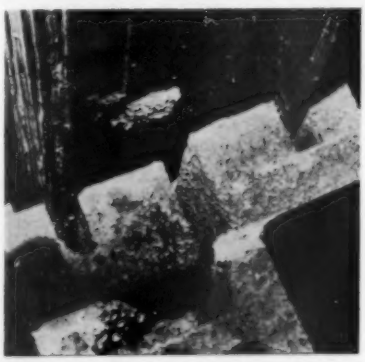
### New Block For Fireproofing Offered by Cincrete Corp.

New and unusual concrete block shapes, designed by Alfred Levitt for his Queens, N.Y., apartment project, and introduced by the Cincrete Corporation, Long Island City, N.Y., represent a new approach to prefabrication in fireproofing design.

Structural steel members must be fireproofed to protect them from high temperatures in fires, the degree of the fireproofing usually specifically determined by building code requirements. Heretofore it has been customary to use various types of masonry units for this application. The units are cut on the job as installed, to fit around the structural members. Interior finish is then applied over this fireproofing.



View upward showing solid slotted units enclosing an overhead I-beam and joining wall block on interior column fireproofing.



Solid slotted units enclosing vertical I-beam columns; the slotted units are bonded into blocks which form a partition wall.

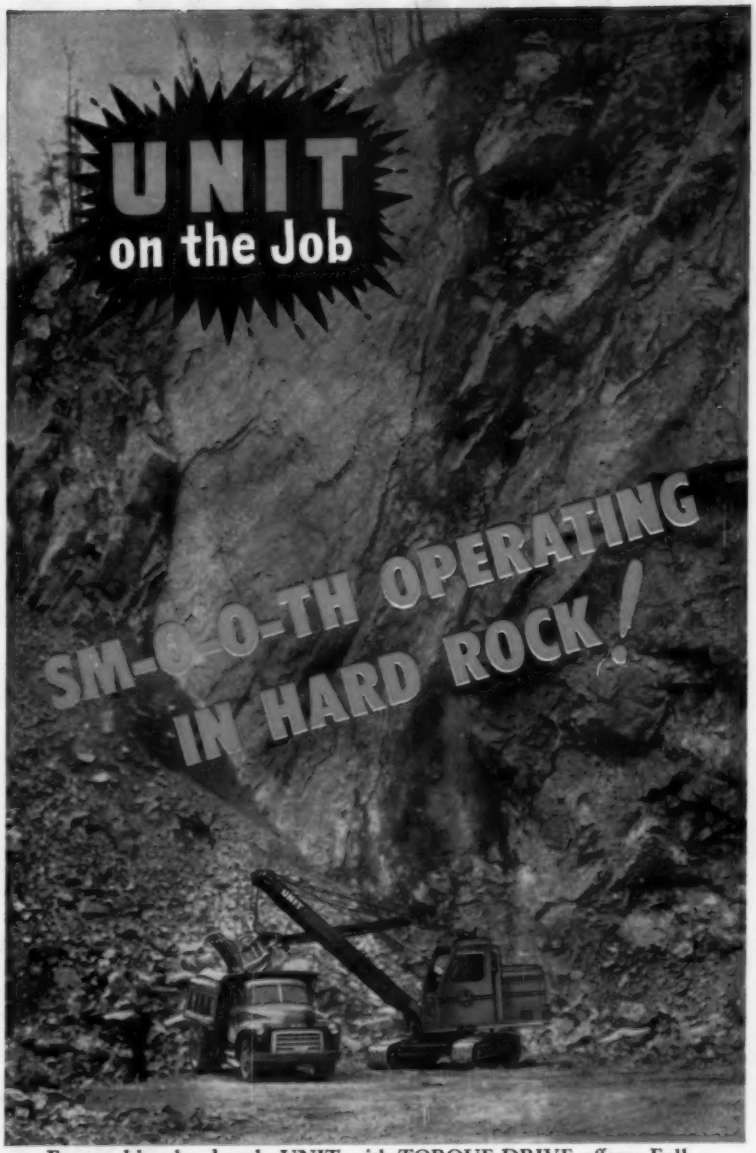
In Mr. Levitt's new conception,

these two functions are combined in specially shaped blocks of cinder concrete which provide adequate fireproofing and also afford a smooth texture which may be painted or otherwise decorated as desired. The units, in this instance, are solid, but they have slots formed in the back surface to fit around the various steel members which they cover. The units are so dimensioned as to combine structurally with interior wall or partition units, a feature of value if the interior surface is to be exposed or painted. The composition of the mixture of concrete is such that the units will hold nails.

Fitting a spandrel cover block into place directly onto a spandrel beam. Fireproofing of the beam web (beneath) can be 2, 3, or 4 in.

A spandrel concrete block in place, providing the fireproofing of the spandrel beam and also affording finished interior surface.

Mr. Levitt's apartment project is eight stories high and the walls are built entirely of concrete block and glass windows, supported by a structural steel framework. The block on both the interior and exterior is exposed and painted. George Kogel, president of Cincrete Corporation, stated that the shapes offer architects and builders a three-way advantage: they can be used as both structural and decorative elements, and because they are prefabricated for rapid assembly with other structural members, they will also reduce the construction time.


For working hard rock, UNIT with TORQUE DRIVE offers: Full, steady power without stalling engine — Increased lugging power — Elimination of shock loads on machinery. Investigate these advantages and other UNIT features. Write for Bulletin No. U-1153.

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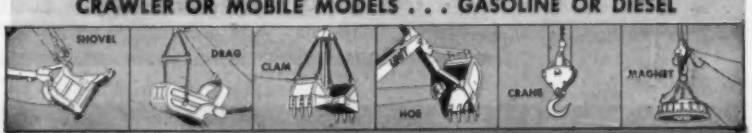
½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

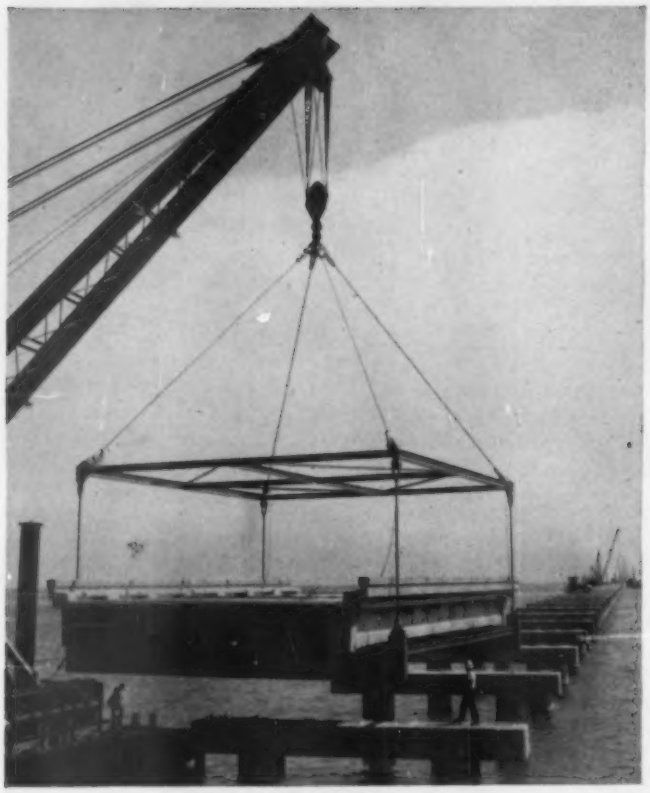



All Models Convertible to ALL Attachments!

# PRESTRESSED CONCRETE

## Pretensioned with 3,700 tons of Union

## Lake Pontchartrain high-lights



**It's pushing across open water** at a record pace of ½-mile a week. It's the world's longest vehicular bridge. And it's also the world's most impressive example of the advantages of prestressed concrete construction pretensioned with Union TUFWIRE strands.

**The concrete slabs** are 56 feet long and 33 feet wide, precast complete with curb and gutter. This giant unit size is made possible by prestressing with 175 separate TUFWIRE strands. The slabs (see photo at left) are swung into place atop hollow, cylindrical prestressed piles 54 inches in diameter.

**Requirements for the causeway were:** low initial costs and maintenance; high degree of strength and permanence; extremely fast construction to minimize delaying action of frequent squalls, fog and rough water. *Prestressed concrete was the answer.*

**And this most vital** requirement: dependable, adequate, on-schedule supply of the steel tendons that reinforce the concrete. *Union TUFWIRE strands was the answer.*

union

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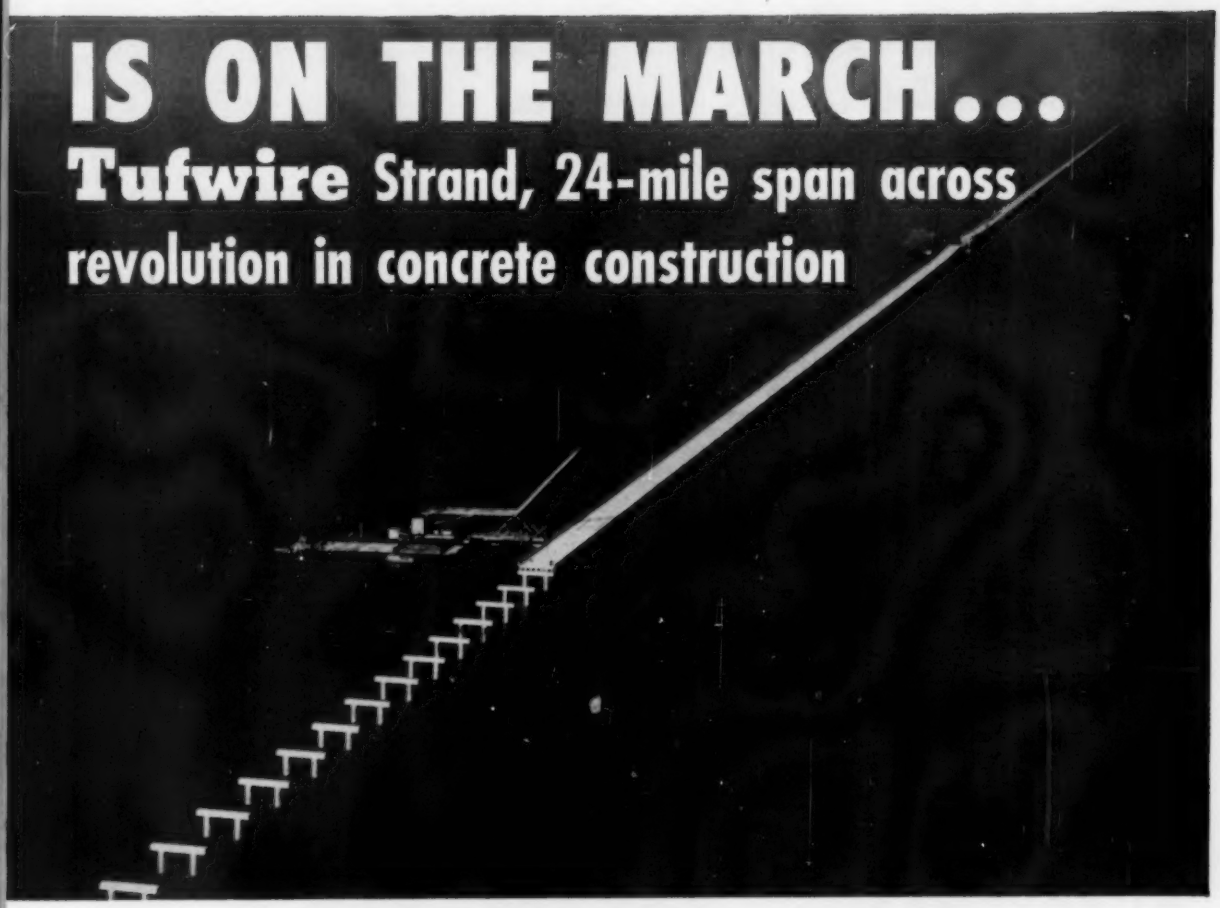
Stress-Relieved

Wire & Strand

*Available in Reels or Coils*

# IS ON THE MARCH...

## Tufwire Strand, 24-mile span across revolution in concrete construction



## FROM AIRPORTS TO ZOOS

### ...use of Tufwire Strand and Wire—prestressed concrete advances in seven-league strides

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It's a comprehensive handbook that gives you important facts about prestressed concrete, and complete specifications and data on TUFWIRE as used in both pretensioned and post-tensioned prestressing.

**Prestressed concrete** is finding a wide range of uses in buildings, bridges, and highways. A look at the "small item" end of the list turns up such products as movable curbs for parking areas, light poles and sign standards, fence posts and many another. Prestressed concrete's field of uses is as unlimited as the imagination of engineers and businessmen!

**Union Wire Rope Corporation** takes in stride an order for more than 3,700 tons of TUFWIRE strand for prestressing the longest highway bridge in the world—and at the same time appreciates and promptly supplies the smallest orders and newest customers.

**At your service** is the Union Wire Rope Corporation Engineering department and research laboratory. Let us help you explore the advantages of prestressed concrete in your operation, and give you a lift with any prestressing problem.

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Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

**2304 Manchester Avenue, Kansas City 26, Missouri**

# STEAM CLEANING PAYS
## In Reduced Equipment Downtime

By MICHAEL K. DUGENER
Malsbary Manufacturing Co.
Oakland, Calif.

HOW much can you save by re-reducing equipment cleaning time? Here are two cases to help you answer the question — Cleaning mud, dirt, grease, and accumulated cement from mix trucks formerly necessitated a full day's downtime for each truck at Whitestone Ready Mix Corp., Whitestone, N. Y. Then the firm switched to a heavy-duty steam cleaner which cleans trucks in a quarter of the time—or a saving of about 6 hours per truck.

**How Size of Unit Affects Cost on Heavy Work**

| | STEAM VAPOR CLEANER | | | HIGH PRESSURE COMBINATION | | |
|---|---|---|---|---|---|---|
| | 120 g.p.h. | 180 g.p.h. | 300 g.p.h. | 360 g.p.h. to 300 p.s.i. | 1200 g.p.h. to 400 p.s.i. | 2100 g.p.h. to 400 p.s.i. |
| Time To Do The Job | 12 hrs. | 8 hrs. | 5 hrs. | 2½ hrs. | 1½ hrs.* | Hourly costs comparable with 1200 g.p.h. size, but can do twice as much cleaning work in the same time because 3 and 4 cleaning guns can be used simultaneously. |
| Labor @ $1.50 per hr. | 18.00 | 12.00 | 7.50 | 3.75 | 2.25 | |
| Fuel @ 20¢ per gal. (3 g.p.h. fuel per 120 g.p.h. water) | 7.20 | 7.20 | 7.50 | 3.00 | 1.20** | |
| Cleaning Compound @ 20¢ per lb. (1½ lbs. per hr. per 120 g.p.h. water) | 3.00 | 3.00 | 3.13 | 1.25 | .50*** | |
| Electricity @ 1.8¢ per kw. hr. | .07 (¾ hp.) | .07 (½ hp.) | .09 (1 hp.) | .07 (1½ hp.) | .20 (7½ hp.) | |
| Water @ 5¢ per 1,000 gal. | .12 | .12 | .12 | .05 | .07 | |
| Hose Depreciation @ 10 ¢per operating hr. per 25' length | 1.20 | .80 | .50 | .25 | .20 | |
| Total Cost of Job | $29.59 | $23.19 | $18.84 | $8.37 | $4.42 | |

*One man. **Use cold water first. Fire for one hour only. ***Compound for one hour only.

On an Ontario job mud froze in the bowls of motorized scrapers standing overnight in zero weather. When operators started up in the morning, they frequently snapped the cables. As a result, there was down time for rethreading the cable, plus high cable costs. Attempts to clean out the frozen mud with picks and shovels proved impracticable. Then some one hit on the idea of steam cleaning the mud out of the rigs each night. That ended the trouble.

To get a rough idea of the savings, take the rental rates for your equipment and multiply by the hours saved by steam cleaning. In the case of the ready-mix trucks, daily rental rate for a 3-cu. yd. mixed truck is given as $46.50 in A.E.D.'s Rental Rates. That's $5.80 per hour, or a saving of $30-$35 in down time each time the truck is cleaned. This saving is the result of using a high-pressure (up to 400 p.s.i.), heavy-duty steam cleaner in place of a smaller steam vapor cleaner (120 p.s.i. maximum).

However, even small steam vapor cleaners clean much faster than is possible with the old hand method of brush and distillate. Steam cleaning, regardless of cleaner size, pays off in many ways besides just reducing cleaning time. For example:

1. By revealing worn or faulty parts in time to replace or repair before expensive breakdowns.
2. By keeping operations going in winter.
3. By eliminating grease wiping on the part of mechanics. A survey shows this chore accounts for 40 percent of mechanics' time in plants not using steam cleaning.
4. By removing abrasive, corrosive dirt and grease, thereby checking wear.
5. By cutting repainting costs.
6. By increasing efficiency of equipment and operators.

There are all kinds of opinions on the question "How often should you steam clean?" According to actual experience, frequency of cleaning ranges from daily to once a year (at overhaul time). Individual work schedules and type of equipment will dictate to a large extent how often one should steam clean. Probably the best answer is: "As often as it pays."

How much time should be allowed for cleaning? The answer naturally depends on (a) the pressure and volume of solution the cleaner delivers and (b) the condition of the equipment being cleaned. Here are average cleaning times, taken from user reports from all over the United States and Canada: D7 and D8 tractors—1½ to 2 hours; TD dozershovels—2 hours; Payloaders—45 minutes; motor graders—3½ hours; 1½-cu. yd. shovels—3 to 4 hours.

High-pressure combination cleaners, combining hydraulic pressure developed by pump, and thermal pressure developed by super-heating flowing water in coils, have proved

"Cleaned with a whisk broom, putty knife and . . .
EDI-COTE 103 in half the time!"

says owner* of this 17 year old mixer that looks like new.

EDI-COTE #103 is a revolutionary new release agent that prevents concrete from bonding to mixer blades and parts. EDI-COTE #103 eliminates the use of air guns and sledge hammers in the daily clean-up. EDI-COTE #103 creates a non-hardening film which prevents the forming of a bond between concrete and metal. It adheres rigidly and will not dissipate due to chemical action or abrasion. One application of EDI-COTE #103 will remain effective throughout the longest working day. EDI-COTE #103 can be applied with brush or spray. Shipped in 55 gallon drums. 5 gallon cans available for trial shipments only. Order EDI-COTE # 103 today!

* Frank Erdman & Son, Milwaukee, Wisconsin

Edick LABORATORIES
427 West National Avenue
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For further information on EDI-COTE #103, see your NCMA Technical Bulletin No. 2, Attachment No. 1, March 3, 1955.

# MOISTURE-PROOFING ADDITIVE

## *for concrete and cement materials*

Now you can moisture-proof your concrete products by the simple addition of a small amount of LOSORB to the mix. The photograph above shows clearly the amazing effectiveness of Losorb. The blocks are identical except for the Losorb—water was poured on both simultaneously—and the picture shows the imperviousness of the treated block.

With this treatment you can produce water-tight concrete blocks with which to build walls so impervious that they can be painted inside without danger of blistering and peeling due to passage of moisture through the concrete. Losorb materially reduces the cost of providing water-tight building exteriors, and eliminates the need for any other waterproofing above grade.

In addition, Losorb makes the mix more plastic, homogeneous and easy to work, acts as a lubricant in the moulding operations, and minimizes cracks.

Losorb is easy to use—simply add a small percentage (2% to 4%) to the mix. No other change in processing is necessary to give your blocks the decided advantage of *waterproof!*

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**Clairton, Pennsylvania**
*Plants at:*
Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.
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Clairton, Penna.
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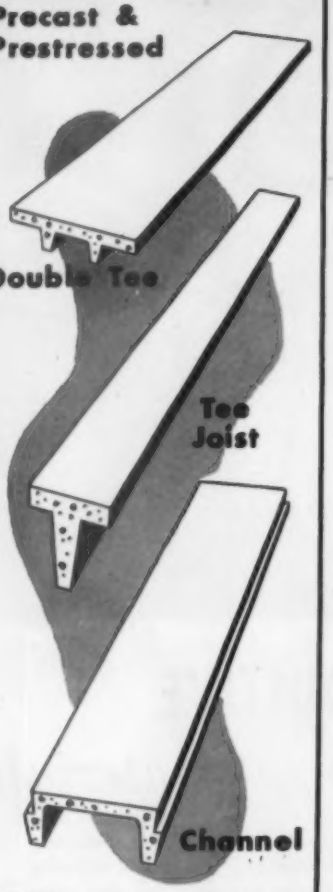
Precast & Prestressed




LEAP concrete products are mass produced in long spans to standardized designs in 15 plants throughout the United States, Canada, Hawaii and South America.

*Franchises available in some localities—write for complete details.*

LEAP CONCRETE
P. O. Box 1561, Lakeland, Florida Dept. F-13

Please send me complete details about LEAP *Prestressed* Concrete.

NAME .....

ADDRESS .....

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(Left): Large tractor-grader of H. O. Penn Machinery Corp., is cleaned of mud and grease with low-pressure steam and warm water, in 1½ hours, or in one-fifth the time previously required.

(Right): Cleaning concrete truck mixers of the Whitestone Ready-Mix Concrete Co., Whitestone, N. Y., with high-pressure steam equipment is accomplished in one-quarter the time previously needed.

the fastest and most efficient for cleaning heavy equipment. These heavy-duty cleaners give you a choice of seven cleaning actions:

1. High-pressure hot solution (up to 400 lb.) maintained at 325 deg. F. for cleaning away waterproof greases, tars, corrosive oil, and dirt.

2. High-pressure cold water (up to 400 lb.) for rapid removal of caked mud and dirt where heat and chemical are not needed . . . and for cold rinsing after steam cleaning.

3. Simultaneous high-pressure steam and high-pressure cold water, permitting the use of steam cleaning and at the same time cold water. This combination can be a real time saver when a big fleet has to be cleaned in a hurry.

4. High-pressure hot water (up to 400 p.s.i. and 300 deg. F.) for removing ice and frozen mud and for rinsing.

5. Low-pressure warm water for washing trucks, tractors, etc.

6. Low-pressure wet steam (15-30 boiler hp.) for general heating operations.

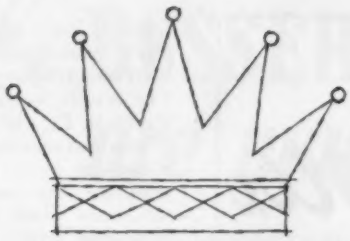
The experience of H. O. Penn Machinery Corp., New York, N. Y., shows how these larger cleaners save time. One man, using a trailer-mounted high-pressure combination cleaner, cleans a Caterpillar DW21 tractor-scraper in 1½ hours, whereas the smaller steam vapor cleaners previously used required five times longer.

What size cleaner? Here again, the answer depends to a large extent on the condition of the equipment to be cleaned, how much equipment there is, and the importance of fast cleaning. There is no substitute for big, heavy-duty cleaners when it comes to cleaning the large pieces of equipment used by aggregate producers and construction firms. The time and cost comparison chart (page 186) shows why this is so. This chart is based on thoroughly cleaning a D8 tractor with a heavy covering of muck and grease.

If the steam cleaner is stationary, it should be located where drainage is good. Preferably it should be placed on a concrete slab; asphalt or tar compounds quickly soften to mush if exposed to hot cleaning solutions. The blast from even a small steam cleaner can cut a hole through asphalt paving in a matter of minutes.

The cleaner should also be placed where it will be protected against freezing temperatures. Central Pennsylvania Quarry, Stripping & Construction Company, locates its big cleaner indoors for protection against weather, so located that steam guns can be used both indoors for cleaning small parts and outdoors for working on big machines. Portable or trailer-mounted cleaners can be moved indoors when they are not in use or when they are drained.

If you have any doubts about the value of steam cleaning, ask your steam cleaner dealer for a list of nearby users. Better yet, ask him for a demonstration on your equipment. You will find that steam cleaning pays. You will find, too, that big-volume, high-pressure cleaners are your best bet.



*for superb mixer performance*

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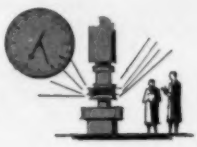
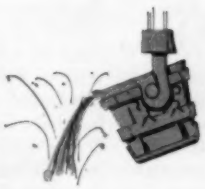


design

manufacturing



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Performance — the only real yardstick when it comes to concrete and other dry material mixers — depends on three significant concepts of quality.

*Research* is the first.

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Only one organization in the world — The T. L. Smith Company — is known internationally as the foremost designer and manufacturer of mixers exclusively since 1900.

Today Smith is recognized not only as the industry's pioneer, but also as the leader in mixer research and design.

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A8857-1P

# R/y Ready Mix

By Harry F. Thomson

## Draining Sand Helps Control

ALL natural sand suitable for use in concrete is saturated with water at some time during the process of production. The presence of that portion of the water which remains in the sand at the time of batching offers one of the hardest problems in making uniform quality concrete.

If the sand is dredged from a watercourse, it remains saturated when the excess water flows away. If the sand is a minor fraction from the washing and screening of gravel, it is likewise saturated during production. Or, if so-called bank sand is used, it must be washed to remove silt and mudballs, and thereby becomes saturated. The amount of water present in such wet sand may run as high as 20 percent of the total weight.

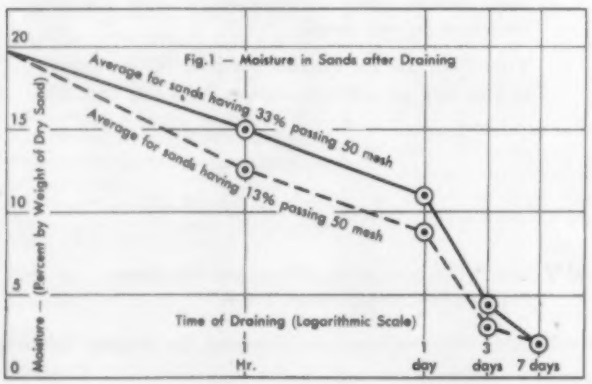
As the cost of transportation from the sand plant to the batching plant may be from one to three or four times the value of the sand at the point of production, the amount of water at the time of weighing is of considerable importance to both the sand producer and the consumer—in our case, the concrete producer. But even if the matter of delivered cost is mutually agreed upon, the concrete man is concerned further with the fact that the loss of water through drainage during transportation and storage (if any) makes the sand an unsteady article in producing a uniform concrete.

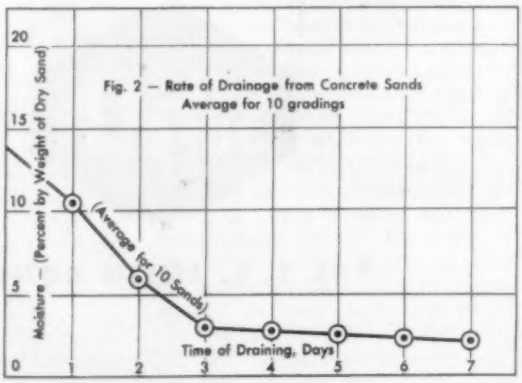
The rate at which water drains from sand is influenced by several factors, including the amount present on receipt, the method of handling and stockpiling, the grading of the sand, and of course the temperature and air-movement which control evaporation. Several observers have reported a smaller loss of water in hauling by truck than by rail from the sand plant to the batching yard. One comparison for the movement from a given yard showed a reduction from 10.2 percent to 9.7 percent (loss of 0.5 percent) by truck, compared to a reduction from 12.5 percent to 5.5 percent (loss of 6.0 percent) by rail. How much of the greater loss during the rail movement was due to the time transit and how much to leakage from the cars, was not stated.

Some years ago C. E. Proudley (now chief materials engineer of the North Carolina State Highway Commission) reported on drainage tests on 10-lb. batches of ten concrete sands at the laboratory of the National Sand and Gravel Association; five of the sands had 13 percent passing a 50-mesh sieve, and five had 33 percent passing 50-mesh. Starting with saturation, the rate of drainage was about the same for the first day; but thereafter the sands with the lower amount of fines passing 50-mesh drained somewhat faster than the group with the higher fines. The results for the two groups are shown in Fig. 1. Thus the amount of retained moisture is affected to an important extent by differences in grading. The averages for all ten sands are given in Fig. 2. These tests were strictly representative of the decline in moisture in a large stockpile, but they were indicative of the relative influence of grading on the rate of drainage.

The ideal place for drainage is at the sand producing plant. Many sand plants operate with large stockpiles as protection against interruption of production, such as high or low water or ice in the stream from which they dredge. Or the plant may have a contract dredge to deliver to the sand plant a supply which will serve requirements for several months ahead. As a result of the drainage which occurs while the sand is stockpiled for a period of several days or even months, the customer receives sand containing fairly low moisture which is reasonably constant from day to day. The customer—a ready-mix producer, for example—can further improve the uniformity of moisture in his sand by stockpiling it before using it in mixing concrete. In such cases the problem of maintaining constant water content is relatively simple.

But concrete control is not so simple when sand which is substantially saturated is loaded into the transport unit. At a majority of plants the transport unit is usually a truck, which very likely delivers the wet sand directly to the customer's conveying system for immediate handling into a bin ahead of the weigh batcher. In that case the sand receives no benefit from drainage during stockpiling, and the problem of frequent checks on moisture and corresponding adjustments of the quantity of water to be added in mixing



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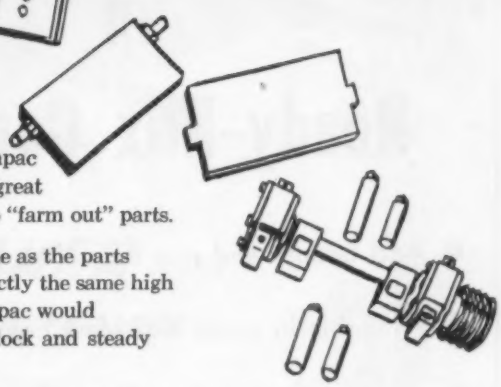

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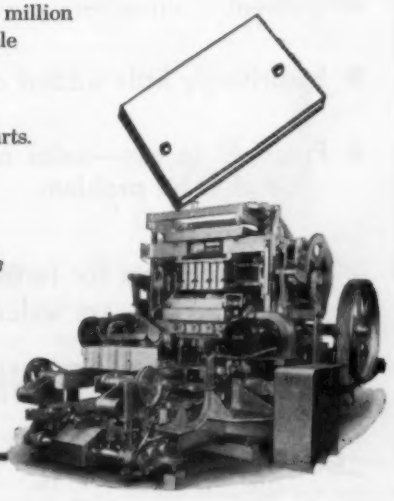

A 8800-1PC

becomes difficult. The writer has witnessed a variation in moisture from 7 percent in one batch to 15 percent in the succeeding batch, in a plant receiving sand under substantially the above conditions. Even with frequent and speedy determinations of moisture, such fluctuations make accurate control of the water content almost impossible.

When concrete sand is stockpiled, the reduction of moisture in the upper portion of the pile is quite rapid. Tests by the control laboratory of Pacific Construction Aggregates, Inc., San Francisco, Calif., showed the following drainage pattern at the indicated levels, for piles of saturated sand after standing 24 hrs.

| Average % Moisture | Pile I | Pile II |
|---|---|---|
| Top ¼ | 9.0 | 8.9 |
| Middle ½ | 10.5 | 9.4 |
| Bottom ¼ | 18.0 | 16.3 |
| Pile | 15.2 | 11.0 |

These sands contained approximately 16 percent passing the 50-mesh screen. It will be noted that the water flowed downward until about 9 percent remained in the upper three-quarters of the pile, but that the bottom quarter remained very wet. (The similarity between these results and those shown in Figures 1 and 2 above will be noted.) It was observed that the amounts of water at the respective levels changed very little in the second 24-hours.

From this report it was concluded that to get minimum water content by stockpile-draining, the material should be transferred at least once, but that when moving the sand, the bottom very wet portion should not be taken. It was also noted that if a crater, such as would be formed by withdrawal through a bottom gate, was filled with wet sand, the water was quickly transferred to the surrounding drier portion of the pile, making the moisture fairly uniform at the respective level.

This report showed that sand moistures as delivered to the batch plant can be controlled within reasonable limits if:

1. All shipments are loaded from stockpiles that have been moved at least once, leaving the very wet bottom level.
2. Shipments are not partly from stockpile and partly from bunkers.
3. All shipments are made by rail or by truck, *not* by a combination of the two.

The first of these recommendations can be met by stockpiling at the sand plant and also at the batch plant before elevating the sand to the bin for batching.

It appears pertinent to refer to the economics of purchasing on an f.o.b. plant basis any sand which is relatively wet when loaded out. The cost of transportation from sand plant to batch plant, whether by rail or truck, is usually somewhat more —sometimes as much as two or three times—than the value of the sand at the producing point. If the sand as weighed out contains 15 percent water and if the transportation costs $1 per ton, the cost to the purchaser of hauling the 10 percent excess water over a reasonable 5 percent moisture content, is roughly 10 cents per ton of sand received. This is a high premium to pay for tare weight, which serves only to make more difficult the subsequent batching to produce uniform concrete. This consideration prompts the thought that it is logical to purchase sand on a delivered basis for material containing a certain moisture, say 3 to 5 percent, with adjustment of the price for moisture on arrival above or below the agreed level. Sand is marketed in a few areas under this logical and mutually-fair plan.

Regardless of the type of arrangement under which sand is purchased, drainage is beneficial for obtaining uniform moisture content and resultant quality control.


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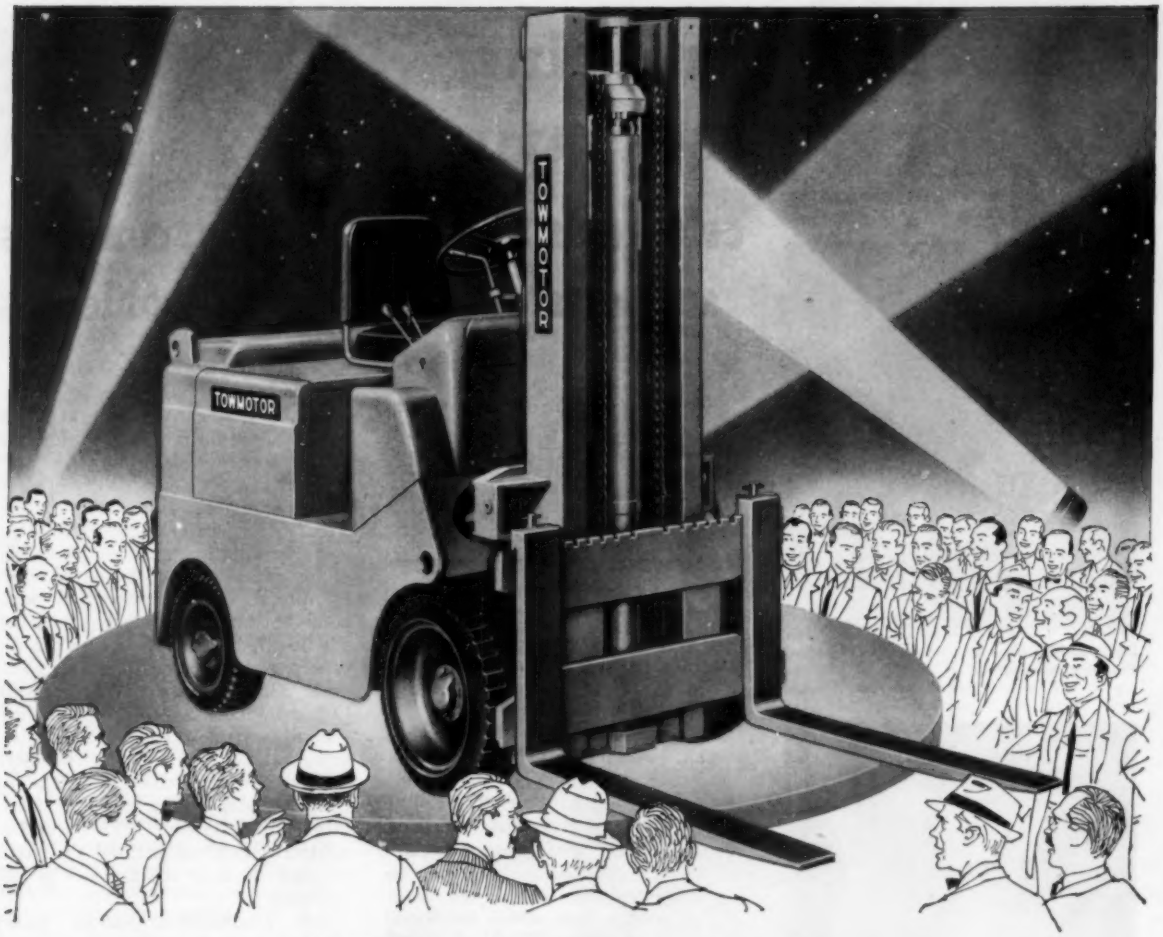


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Among the notable features of the new series is improved power steering now available, optionally, as original equipment. Other features offered for the first time include such outstanding advances as:

*Advanced styling* by a leading industrial designer.

*New functional body design* that provides ample underclearance, greater driving comfort, easy accessibility to engine and parts.

*Exceptional maneuverability* through more positive operating control and dexterous load positioning.

*More powerful engines*—three new power-packed types for Gasoline, Diesel or LP-Gas models.

*Adjustable off-center seating* assures maximum visibility and extra operating ease.

*Precision steering* makes manual or power operation exceptionally efficient (power steering optional).

*Choice of improved "TowmoTorque" drive* or standard transmission as original equipment.

Whatever your materials handling needs, it will pay you to first look into the new, cost-saving improvements offered by Towmotor "Pace-Maker" Series Fork Lift Trucks. For more detailed information write Towmotor Corp., Div. 1306, 1226 East 152nd St., Cleveland 10, Ohio.

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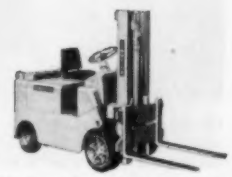
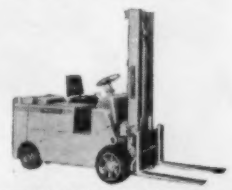
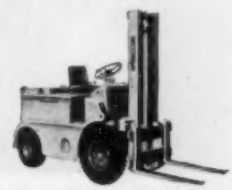


**NEW** Model 600 with lifting capacities of 8000 and 9000 pounds.



**NEW** Model 670 with lifting capacities of 10,000 and 11,000 pounds.



**NEW** Model 680-P with lifting capacity of 6000 pounds.

# Autoclave Building Products Association

## celebrates 50th anniversary; conducts serious study of industry problems

W. E. Kenney (left), Dominion Tar and Chemical Company, Montreal, Que., and Dale Cobb, president, Autoclave Building Products Association.

Dr. George L. Kalousek, Owens-Illinois Technical Center, Toledo, Ohio, who discussed the crystal nature of binders of concrete.

Another ON THE SPOT Report

THE 50th anniversary meeting of the Autoclave Building Products Association, held at the Statler Hotel, Detroit, Mich., on April 22 to 25, 1956, turned out to be one of the most informative gatherings of experts in the industry held in several years. A well-planned program covering many controversial subjects of high-pressure-steam curing had to be extended into one evening session to allow the full discussion which ensued on various phases of efficient design of such systems of curing. Few of the 100 or more producers, representatives of allied firms, and guests who attended the convention left prior to the last session.

**By ROY L. PECK**

The serious note which predominated at all meetings left no doubt that members appreciated the important position which this segment of the concrete masonry industry holds in maintaining quality production. In the many statements made by prominent speakers no evasions were apparent as they faced the problems affecting the future course of action of producers. Such an attitude might well be taken in the meetings of certain major associations. Some of the latter have been negligent at times in the short-shrift consideration afforded controversial subjects.

In a paper by Cedric Willson, vice-president, Texas Industries, Dallas, Tex., members were briefed on autoclave installation and the economy of one-phase curing compared with two-phase. It was especially welcomed by all who had missed hearing this highly factual recital at the recent meeting of the National Concrete Masonry Association at New Orleans. This address pointed the way toward more spirited discussion before a panel of experts who later argued the various essentials of proper design of an efficient autoclave curing system. (This was the subject which necessitated the extra evening session to dispose of all opinions.)

An unscheduled special panel aroused vital discussion of the possible causes of corrosion on racks. This problem has been experienced by some producers who use the high-pressure-steam curing method. Dr. George L. Kalousek made an important contribution to the technical study of volume-change shrinkage in concrete blocks in his paper relating to the crystal nature of concrete

Cedric Willson (left center), vice-president, Texas Industries, Inc., arguing the merits of one- vs two-phase curing methods.

Carl Menzel (left), Portland Cement Association, Chicago, discusses a technical matter with H. E. Eckburg, Peter R. Smith, and C. W. Bros.

binders. M. W. Ferguson, chairman of the concrete products committee of the association, brought to Detroit his 50-ft.-long chart of the moisture and temperature changes in test block specimens recorded in over 300 days of observation. Others described some of the newer installations of autoclave curing, and related experience gained from these.

Carl A. Menzel, Portland Cement Association; T. L. Goudvis, of the N.C.M.A.; John K. Selden, consulting engineer; Dr. W. C. Hansen, Universal Atlas Cement Co.; and E. W. Bauman, National Slag Association, were among the many capable scientists and engineers who throughout the sessions presented expert opinions on technical matters in their respective fields.

In a business session the following officers were elected for the ensuing year: Dale Cobb (sales manager, Jackson Ready Mix Concrete Co., Jackson, Miss.), president (re-elected); Leo I. Ryan (president, Ryan Builders Supplies, Ltd., Windsor, Ont., Canada), vice-president (re-elected); Ralph E. Cromis (Boice Builders Supply, Pontiac, Mich.), secretary-treasurer.

M. W. Ferguson (president, Pre-Shrunk, Inc., Roanoke, Va.) was renamed chairman of the concrete products committee. An announcement will be made at at later date as to the new chairman of the sand-lime products committee, and as to the date and location of the next annual meeting.

*Construction Controls in Concrete Masonry* was the title of a paper presented by C. A. Sirrine, executive secretary, Concrete Products Association of Michigan. Mr. Sirrine emphasized that neither control joints nor joint reinforcing should ever be considered substitutes for each other, as each has its proper place in the elimination of wall cracking. Volumetric instability of masonry units has a definite relationship with relative humidity, he said, and urged that this be taken into consideration in evaluating the volume changes in a concrete masonry unit. The factor of temperature range is often more important than is realized. Improper handling of concrete block after delivery to the job is a third factor which might completely dispel the effect of quality built into concrete units by the producer. Mr. Sirrine urged that more attention be given by producers to this phase of masonry construction.

Mr. Willson's paper (previously mentioned) was one of the much-sought-after collections of practical data on costs. Although the material was described by him as "hypothetical" in character, it is apparent that its presentation was necessarily preceded by months of cost research. It is hoped that these comparative statistics eventually will be made available to the whole industry.

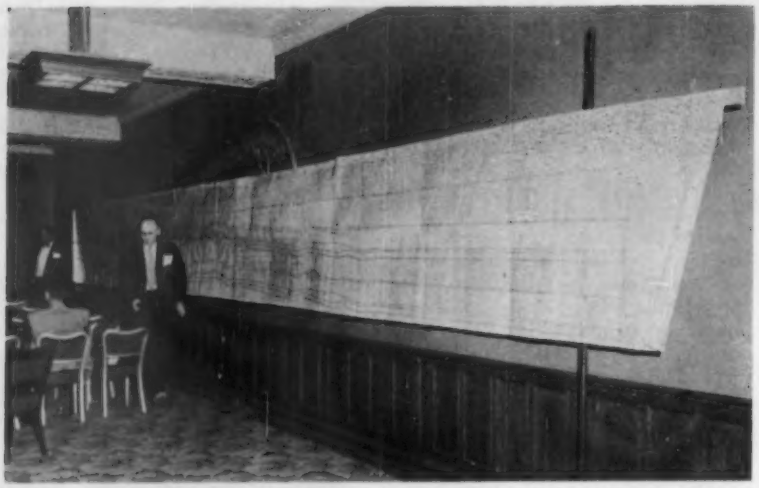
Benjamin Wilk, Standard Building Products Company, Detroit, Mich., related the parallel between the history of concrete masonry units in his home city, and the betterment of building codes. These codes have improved steadily since 1934, when the first modern code went into effect. He also reviewed the progress of block equipment which has taken place in this period. Improved machinery has resulted in the current sale of 40,000,000 concrete units annually in the Detroit area.

Three of the newer installations of high-pressure-steam curing were described by the owners of these plants. Walter W. Horn, president, Cinder Block, Inc., Detroit, Mich., described his new plant, which represents an investment of over $650,000. This plant was fully described in the May, 1956, issue of the CONCRETE MANUFACTURER, page 292). John Pennachetti, president Thorold Concrete Block, Ltd., Thorold, Ont., Canada, told of his new two-autoclave installation at Hamilton. (See CONCRETE MANUFACTURER, December, 1955, page 186.) Richard J. Frazier, general plant manager, Anchor Concrete Products, Inc., Buffalo, N. Y., told of two years of autoclaving at his plant, where the two-phase system

These two distinguished engineers were speakers: Dr. W. C. Hansen (left), research director, Universal Atlas Cement Company, Gary, Ind. and Professor C. W. Smith, Virginia Polytechnic Institute, Blacksburg, Va.

Left to right: Claude W. Deacon and M. Winter Ferguson of Pre-Shrunk, Inc., Roanoke, Va., and C. E. Lovewell, Chicago Fly Ash Company, Chicago. Mr. Ferguson is chairman of the concrete products committee of A.B.P.A.

The panel on design of autoclaving systems (left to right): Robert M. Molloy, D. W. Tappan, A. E. Grann, Morris H. Gross, and John K. Selden.



The blown-up chart record of volume changes in test units. This 50-ft. sheet was made available by M. W. Ferguson, who conducted the tests for over 300 days.

of curing is used. (Stories describing this fine plant have frequently appeared in the CONCRETE MANUFACTURER.)

The value of automation for meeting rising manufacturing costs in industry was discussed by Paul Youngdahl, Mechanical Handling Systems, Inc., Detroit, Mich. While Mr. Youngdahl's examples were based mainly on other than the concrete block industry, considerable discussion ensued as to practical, economical methods which might be used in replacing all handling processes which increase the value (*i. e.*—cost) of blocks.

Due to the greatly increased interest and possible implications in the reported cases of corrosion of metal racks, pallets, and other metallic elements when subjected to high-pressure-steam curing, a special panel was set up at the meeting to cover various phases of this problem. Participating were Carl Menzel, Portland Cement Association, Chicago; Edward W. Bauman, managing director, National Slag Association, Washington, D. C.; Fred W. Reinhold, Anchor Concrete Products, Inc., Buffalo, N. Y.; and W. J. Brulle, Zenith Concrete Products, Inc., Duluth, Minn. A number of cases of varying degrees of corrosion experienced by operators were described, but no definite conclussions were reached as to the causes of this trouble.

In connection with the subject, and as a part of the over-all technical research to be conducted by the N.C.M.A. in the coming long-range engineering research on all phases of concrete masonry, it was announced that the association recently sent a questionnaire to all members to learn the most economical and effective treatment or methods for retarding corrosion of metallic equipment. It is felt that the accumulation of this type of factual data should provide a basis for determining causes and degree of severity of such attack.

One of the most interesting sessions was that at which the design of an efficient autoclave curing system was discussed. Participating in the panel were A. E. Grann, Mechanical Handling Systems, Inc., Detroit, Mich.; Morris H. Gross, consulting engineer, Detroit, Mich.; Robert W. Molley, Anchor Pressure Doors, Inc., Buffalo, N. Y.; D. W. Tappan, McNamar Boiler and Tank Company, Tulsa, Okla.; and John K. Selden, consultant on autoclaving, Toledo, Ohio.

Mr. Selden listed several correlated efficiencies in high-pressure-steam curing. These included space, mechanical, thermal, paste, cycle and cubing efficiencies, which he considered the most important to evaluate in deciding upon any system. While it is not possible to enumerate here all the suggestions Mr. Selden made as to the ideal curing setup, the following are particularly pertinent: It is not efficient to use the autoclave for preheating. Charging and discharging should be done as rapidly as possible to conserve heat. Use the full cross-section of the autoclave, as nearly as possible. Keep the autoclave under payload as much of the time as practicable. Eliminate thermal shock of cold blasts on units from machine to storage. Make use of the condensate and blow-off steam in carrying these to the incoming boiler water, through heat exchanger, etc. Finely ground silicious materials can be used to advantage in most mixes. Gradation of aggregates should be obtained through three or more screens to narrow the possibility of segregation.

Mr. Tappan described several of the latest installations of autoclaves made by his company. That of the Hovey Concrete Products Company, Inc., Santa Fe, N. M., consists of a cylinder 106 in. in diameter by 121 ft. in length, making this the largest autoclave installed to date. Mr. Tappan stated that his company is now working up a package model autoclave unit which will include a model autoclave, a small vertical boiler with instruments, and a pump, all of which will be mounted on a common base with connecting piping. This setup will enable the prospective buyer to rent this equipment at a low cost, to check whether it is feasible to enter high-pressure-steam curing with his materials, aggregates, etc., before assuming the expense of installing full-size equipment.

Mr. Molley recommended doors at both ends of the autoclave, to permit moving units into and out of the cylinder on cars with the least loss of heat and moisture to all elements. In 2-cycle operation the highest possible co-ordination must be achieved between transportation of units and loading and unloading time, with some allowance for accidental delays. Considerable discussion ensued as to the proper procedure when units are left in the autoclave over a week-end. The door of the cylinder should be left open when units are inside over a week-end. It was generally agreed that the units must have moisture in them when the high-pressure-steam curing commences—whatever the method used to provide this—and that the units must be dry at the end of this curing.

In a subsequent exchange of experiences it developed that some producers were thinking in terms of three cycles per day. Carl Menzel stated that he felt that efficiency in this respect could be carried too far, and proved that such procedure was indeed unwarranted and dangerous. He recommended that the minimum curing in autoclaves should be not less than 7 hours at 150 deg. F., or 8 hours at 120 deg. F., and that the whole object of high-pressure-steam curing was to provide a stable unit. Without such a unit the future of concrete masonry is clouded, Mr. Menzel declared, as competitive units are stable and are unaffected except for moisture shrinkage. He warned against allowing units to cool off in the autoclave, adding that they

should be removed as soon as it is physically possible.

C. W. Bros, president of Wm. Bros Boiler and Manufacturing Company, Minneapolis, Minn., made a suggestion of value regarding controls of pressures and temperatures in high-pressure-steam curing. Temperature, he said, is the factor which should be controlled to a degree greater than pressure in the cylinders, and its buildup in a curing cycle should be so many degrees per minute. No pressure is obtained in the autoclave until after the temperature has passed 212 deg. F., and in the zone from 70 deg. F. to 212 deg. F. the producer is operating blindly as to the conditions within the cylinder. Carl Menzel added that the steam should "saturated" in character; and if the pressure is kept constant, the temperature will be satisfactory.

W. E. Kenney, Siporex Division, Dominion Tar and Chemical Company, Montreal, Canada, told of expansions already effected in the company's plant there which will bring the capacity to 405 cu. yd. daily. This company holds the license of the Swedish parent company for operations on this continent. Neal Newell, plant manager, Grays Ferry Brick Company, Conshohocken, Pa., described the production of sand-lime brick in pastel colors at his plant, illustrating his talk with a series of interesting slides showing the color possibilities offered, to brighten up the exteriors of masonry buildings.

In a talk on *Cost Management for Operating Profits*, Gerson B. Bernstein, consulting engineer, Allied Management-Engineering Company, Detroit, Mich., said that budgets are the "pre-planning" of operations, and that the operating statistics he spoke of might be considered tools to accomplish a comparison of results with actual costs. Applying this general theme to the concrete block industry, he presented several worthy suggestions to the members as to the selection of key personnel and the establishment of specific job responsibility for each employee.

In a session devoted to the evaluation of a specification for distinguishing merits of autoclave-cured versus conventional-cured concrete masonry units, various opinions were voiced as to the methods currently being used in testing specimens for moisture-volume change. To date, three methods have been used for making such acceptance tests — the "Rapid," British, and Reference methods. Results vary in each case, and it was agreed that a new test procedure is needed, to correlate the data obtained from these three methods as to shrinkage in a block wall. It is also desirable to achieve this objective in a shorter testing time than is now required. Professor C. W. Smith, department of applied mechanics, Virginia Polytechnic Institute, Blacksburg, Va., presented data resulting from tests by the "Reverse Rapid Method," on block specimens — both low- and high-pressure—made at the laboratories of Pre-Shrunk, Inc., block producers of Roanoke, Va.

M. W. Ferguson, president of Pre-Shrunk, and chairman of the concrete products committee of the association, described these results in a 50-ft. chart record set up for study at the meeting, which showed the volume changes occurring in test specimens subjected to various conditions of moisture and temperature over a period of over 300 days.

In the discussion following the presentation of these papers, Carl Menzel, P.C.A., Chicago, stated that results by any of the test methods show that concrete units "hurriedly" cured (5 hours) have twice the volume change as units "properly" cured (8 hours). He said that the difference in curing involves only a few mills of extra cost per unit and that good curing is about the only practical way to achieve stability in block units.

On the effect of air carbonation volume changes by carbon dioxide ($CO_2$), Dr. W. C. Hansen, director of research, Universal Atlas Cement Company, Gary, Ind., stated that such shrinkage is long-range in character, and can be more accurately determined in tests by the use of electric ovens in place of the usual gas oven used in measuring shrinkage.

Dr. George L. Kalousek, chief of physical chemistry and solid state physics, Owens-Illinois Technical Center, Toledo, Ohio, delivered a highly technical discourse on *The Crystal Nature of the Binders of Concrete Block*. This was essentially a continuance of his talk last year before this association. Dr. Kalousek described a study of hydrous calcium silicates which form the crystalline binder of concrete products. He presented a series of slides describing the Tobermorite ($C_4S_5H_5$) "family" of crystals and suggested designations for members of this chemical family. He pointed out the possibility of obtaining a true chemical bond in such products by having the physicist change the spacing of the molecules of the structure to reduce block shrinkage. Volume change in block is dependent upon the nature of the binders; and the addition of alumina in cement further complicates the chemical setup, which would require up to 200 deg. F. for 12 to 16 hours to effect molecular spacing desired.

A meeting of the American Concrete Institute Committee 716 (on high-pressure-steam curing) was held after the final sessions of the association. All members interested were invited by Dr. Hansen, chairman of that committee, to sit in on this meeting at which a report on the current activities of the committee was presented. This group handles the correlation of research done by several agencies on various phases of high-pressure-steam curing of concrete masonry units. One of its functions is the dissemination of helpful information regarding the efficient production and use of these units.

### Honors to Bellingham Bldrs. For "Best Tailored" Block

An 8- by 8- by 16-in. standard block produced by the Bellingham Builders Supply Company, Bellingham, Wash., won first place honors as best tailored block at the March 15 meeting of the Concrete Products Association of Washington. The block was made on a Columbia Machine Works Model 8 automatic.

R. W. Hutton, general manager, represented Bellingham Builders at the meeting.

### Burns & Russell Initiates Regional Sales Clinics

Burns & Russell, Baltimore producers of Spectra-Glaze compounds for structural glazed block, recently held the first of a projected series of sales clinics, designed to give salesmen a thorough analysis, both physical and chemical, of their products. One-day clinics held to date in New York and St. Louis were attended by over 50 salesmen of licensees in those areas. Further meetings are scheduled for Chicago, Lansing, Mich., and Thorold, Ontario.

J. G. Whitman, vice-president, and J. A. Sergovic, technical director of the company, led the technical discussions. Mr. Whitman stated that this phase of the company's policy follows the trend of leading manufacturers who assist dealers by sales training, as well as advertising.

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At Greenwood, Miss., the plant of the Greenwood Concrete Block and Tile Company opened recently with an announced daily capacity of 2,500 to 5,000 units. Operators of the business are J. J. Richards, W. R. Phillips, and L. D. Phillips.

# WORLD'S LONGEST HIGHWAY BRIDGE

## *24-mile crossing of Lake Pontchartrain, La., built of 200-ton prestressed concrete slab sections, an example of technical know-how*

The 24-mile bridge crossing at Lake Pontchartrain, La., longest in the world, is built entirely of prestressed concrete members. This construction view shows the general design of slabs, with strands cut off at the ends of multiple-Tee sections after the pre-tensioning force is taken by the concrete.

THE longest vehicular bridge in the world is now nearing completion in the greater New Orleans area. The 24-mile long structure crosses Lake Pontchartrain and thus affords a saving of many miles and much time on highways concentrated around the southern metropolis.

Prestressing played a major role in the construction of the slabs forming the bridge deck, as well as in the 54-in. diameter pilings and cap bents upon which the bridge slabs rest. The slabs are 56 ft. long and 33 ft. wide, of multiple-Tee cross section in which the Tee's contain highly tensile-stressed steel strands. Over 175 of these separate strands are utilized in each of the 2,250 slab sections in the bridge. Each ⅜-in. strand is composed of 6 wires laid helically around a king wire.

The problems of handling this enormous amount of wire—well over 4,000 miles of ⅜-in. strand—in its installation in the prestressed slabs were so successfully accomplished by the contractor, the Louisiana Bridge Company, that it is felt the methods followed would be of interest. This contractor applied every possible production technique and time-saving procedure in a central casting yard which he set up for the pre-tensioning of the members.

**By R. O. KASTEN**
Director of Research
Union Wire Rope Corporation
Kansas City, Missouri

As each of the 200-ton sections was built and cured, it was moved by a gantry crane serving the casting bed area and taken to barges moored alongside the yard. The barges, with their cargo of slabs, were towed to the proper pier location along the line of bridgeway, and set in place by a large crane mounted on the barge. The piling and cross bents, manufactured similarly in the same casting yard, were moved in like manner to their respective sites and were installed considerably ahead of the slab sections. As each section of the bridge smoothly progresses toward completion, there is further evidence of the fact that the prestressed concrete industry has reached a point of economical competition with competing materials and methods.

Prestressed concrete is not new. Although patents were granted to an American engineer for prestressing as early as 1886, the first attempts at prestressing were not successful. The early pioneers did not foresee the loss in prestressing force due to the elastic shortening, bending, shrinkage, and creep of concrete, and the creep of prestressing tendons. The average loss in this prestressing force may run as high as 18 percent. Consequently, when mild steel bars were used as the stressing tendon, the prestressing loss was sometimes as great as the prestressing force originally applied, and prestressed concrete turned out to be reinforced, not prestressed.

The Union Wire Rope Corporation, which provided the steel strands used in the Lake Pontchartrain bridge members, has available some data regarding methods of handling the strands in the casting yard of the contractor. The company's Tufwire strand was used throughout the work. Hot-rolled high-carbon steel rods of suitable diameters are selected, with the following chemical analysis: carbon, 0.75 to 0.80 percent; manganese, 0.45 to 0.85 percent; phosphorus, 0.045 percent maximum; and sulphur, not more than 0.050 percent. These rods are normalized (by a process called patenting), cleaned, and cold-drawn a sufficient amount to produce the required final physical properties. Since both the ultimate and yield strength of the steel is very high, this strand is able to absorb the loss in prestressing forces and still have sufficient strength to hold the concrete in compression as designed.

The strand furnished to the contractor for this bridge job has the following properties:

Minimum metallic area, .0770 sq. in.

Minimum ultimate tensile strength, 20,000 lb.

Minimum yield strength (0.2 percent offset), 16,500 lb.

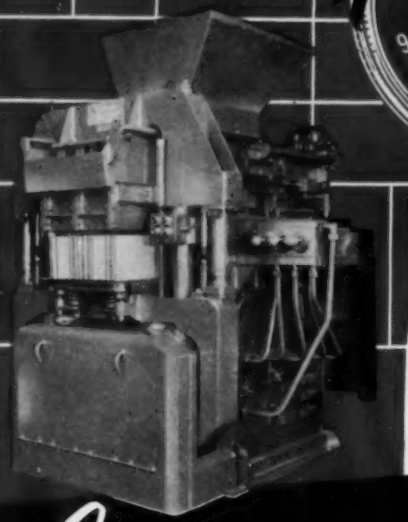
Average modulus of elasticity, 28,000,000 p.s.i.

Minimum ultimate elongation, 3 percent (10 in.).

Length of lay (approximate), 4½ to 8 in.

These specifications, determined by the design engineers, Palmer and Baker, Mobile, Ala., are slightly higher than the present standards. The minimum tensile strength is equivalent to 267,000 p.s.i., which is several times the strength of ordinary mild reinforcing steel. The accompanying chart shows a typical stress-strain curve of the ⅜-in. Tufwire strand. This curve shows a high yield strength, coupled with a substantial but not excessive ultimate

# Why up to the MINUTE "ENGINEERING" Means



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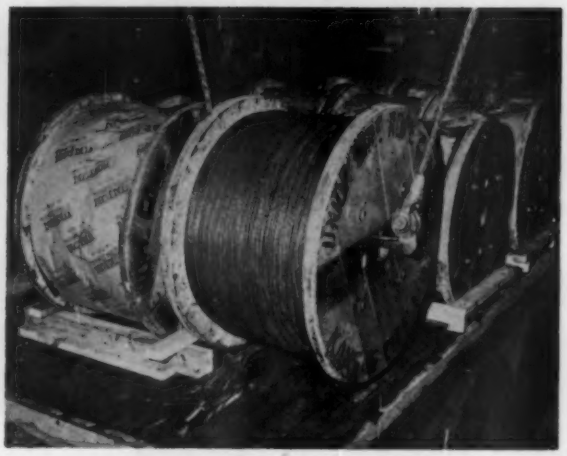
Each coil of ⅜-in. strand 5 ft. in diameter, contained 3,388 ft. of strand. This odd length avoided long remnants.



Strand can also be shipped in reels of 10,000-ft. lengths, but reels are bulkier and not as economical to use as coils.

elongation at rupture. The minimum yield strength, 0.2 percent offset, should be at least 80 percent of the ultimate tensile strength. For ductility requirements, the wire should be capable of taking a reasonable amount of cold deformation without fracturing.

The last step in manufacturing Tufwire strand or wire is stress-relieving. Here the tendons are pulled for a few seconds through a lead bath having a temperature of 750 to 800 deg. F. This process does produce changes in the physical properties. For instance, there is a noticeable increase in ultimate elongation. This time-temperature treatment removes some of the residual stresses, making it easier to handle the strand at the job site.

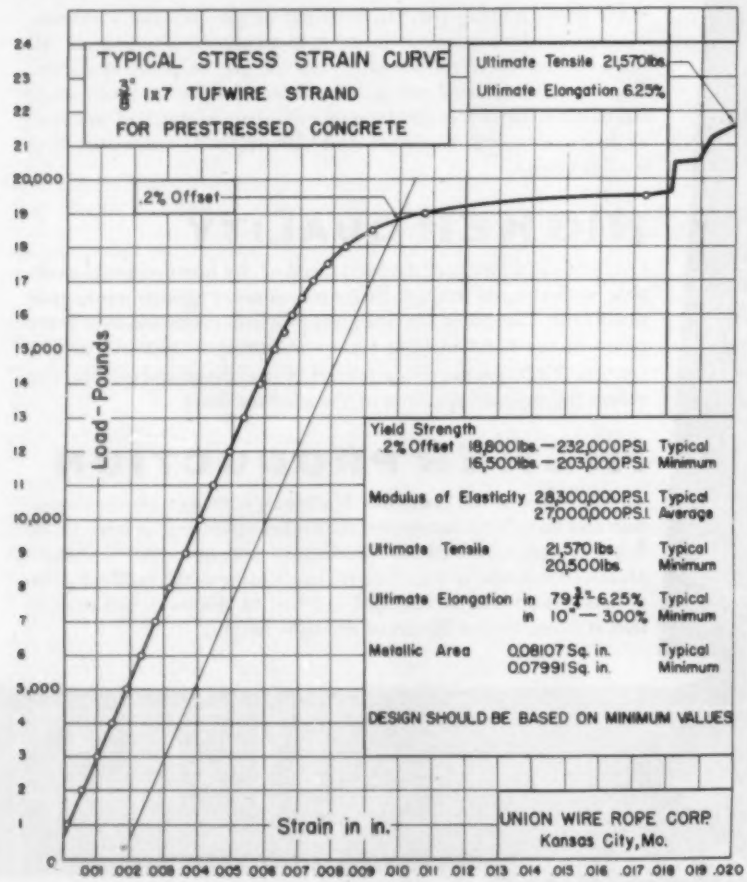
Any oil, grease, or foreign material is removed from the strand to allow better bonding of the concrete. Stress-relieving also reduces the loss due to load relaxation up to 70 percent of the ultimate strength, and affords more uniform physical properties. Stress corrosion has received considerable emphasis recently. Tests show that cold-drawn stress-relieved wire is far superior to oil-tempered wire.

Strands can be furnished either in coils or reels, as shown in the accompanying photographs. Coils are 5 ft. in diameter and can be furnished in the maximum continuous length of 3,600 ft. in the ⅜-in. diameter. Strand in coils is generally easier to handle, as it will payoff straighter without kinking. It is cheaper, since the consumer does not have to pay freight on the dead weight of the reel. The ⅜-in. diameter coils for the bridge job were shipped in lengths of 3,388 ft. each, in order to avoid

(*Continued on page* 204)

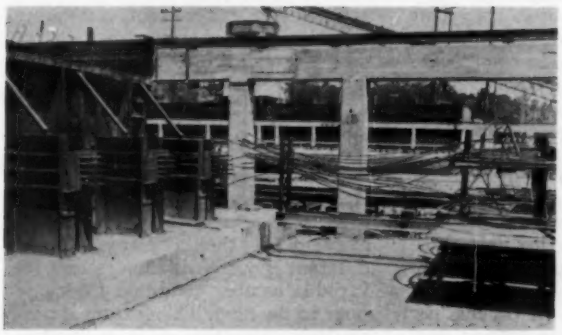
**Minimum Requirements for Sizes of Wire**

| Nominal Diameter (Inches) | Weight per 1000 ft. (Lb.) | Minimum Area (Sq. in.) | Min. Ult. Strength (Lb.) | Standard Lengths in Reels (ft.) |
|---|---|---|---|---|
| 1/4 | 122 | .0356 | 9,000 | 20,000 |
| 5/16 | 210 | .0578 | 14,500 | 15,000 |
| 7/16 | 386 | .1089 | 27,000 | 7,500 |
| 1/2 | 521 | .1438 | 36,000 | 5,000 |


TYPICAL STRESS STRAIN CURVE
⅜" 1x7 TUFWIRE STRAND
FOR PRESTRESSED CONCRETE
Ultimate Tensile 21,570lbs.
Ultimate Elongation 6.25%
.2% Offset
Load - Pounds
Yield Strength
.2% Offset 18,800 lbs. — 232,000 PSI. Typical
16,500 lbs. — 203,000 PSI. Minimum
Modulus of Elasticity 28,300,000 PSI. Typical
27,000,000 PSI. Average
Ultimate Tensile 21,570 lbs. Typical
20,500 lbs. Minimum
Ultimate Elongation in 79½"-6.25% Typical
in 10" — 3.00% Minimum
Metallic Area 0.08107 Sq. in. Typical
0.07991 Sq. in. Minimum
DESIGN SHOULD BE BASED ON MINIMUM VALUES
Strain in in.
UNION WIRE ROPE CORP.
Kansas City, Mo.

The swift car used at the casting site has a capacity of 25 coils of strand, which unwind and feed through the guide plates (center).

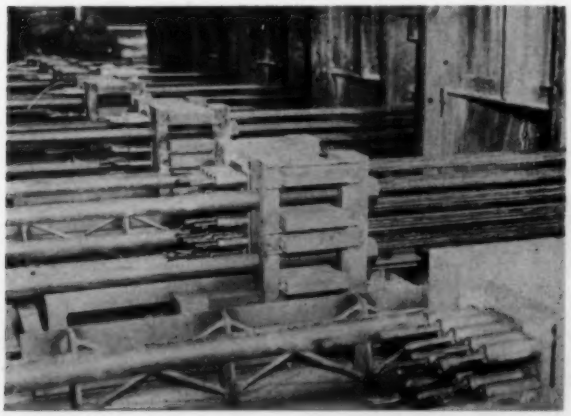
Left: A coil of ⅜-in. strand being lowered onto a swift support.



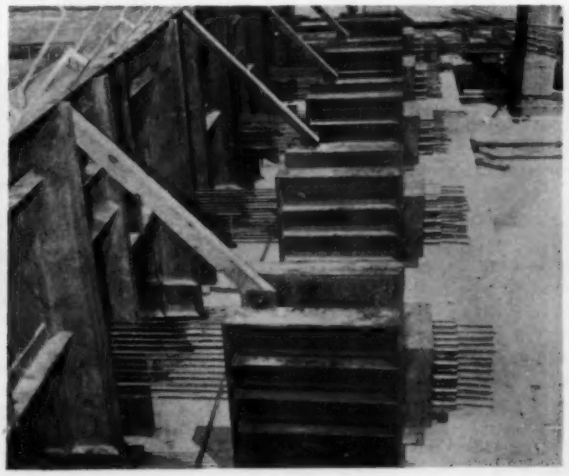
The strands have been pulled through last guide plate and cut off to the proper length before being pulled through the clamps at the end of the slab.

This swift car, with the coils almost unwound, is about ready to be re-loaded with coils of ⅜-in strands. Note the three-tier-high swifts.

Below: The jacking end of the slabs, showing jacks placing the proper tensile force in the 25 strands in each leg of the slab. The clamps will hold this force until it is taken by the hardened concrete through bonding action. The high-strength 7-wire strands are then cut off at the end of each member, or the concrete is sawed into required lengths.



The front end of the casting bed, showing strands securely anchored by reliable clamps. The strands will be burned off at the ends of the slabs when the stressing force has been transferred to the concrete.



# Trends in Pre-Tensioned Concrete Roof Members*

By H. H. EDWARDS
President
LEAP Concrete, Inc.
Lakeland, Fla.

TODAY the prestressed concrete industry is well established in central plant mass production of building members. The young three-year-old industry is through its initial growing pains and is starting to show a definite trend of its future course. The future looks very promising.

Prestressing is a tool which is improving the quality of concrete construction and reducing costs. This ability to reduce cost and increase quality at the same time clearly points to the future of concrete construction. By means of the new tools of prestressing and precasting we can now afford to use concrete in long-span roof structures. Concrete as a roof deck has been greatly desired in the past—so much so that the designers were willing to support it on exposed structural steel. Now a new industry emerges which can furnish the concrete deck and beam built in one piece at an attractive price. The prices are so low that concrete as a roof deck is now competitive with many conventional designs.

Prestressing, to enter mass construction in the building field, must standardize. This standardization is now coming about to a degree. For example, there are now more than 30 firms in the United States producing the double Tee from the same size form. The Tee joist and the channel have also reached a degree of standardization.

Mass production is being accomplished in prestressing through standardized forms and standardized design of product. Many plants are now turning out pre-tensioned concrete roof slabs at the rate of 30 sq. ft. per man-hour, and indications are that this figure will double and triple in the future.

Form amortization is now reaching a low figure. Each long-line form, while high in initial cost, is capable of producing a million dollars' worth of product. The trend today is toward an all-steel form of long length, usually 400 ft. These forms are heated from underneath with steam, hot water, or oil. By using high-early-strength cement and raising the curing temperature overnight many plants are producing a product each day in each form.

Strand has been selected as the prestressing steel by practically the entire industry. The strand used is seven-wire uncoated and stress-relieved. Originally the industry started using ¼-in. and 5/16-in. diameter strand. The trend today is to larger size. The most popular now is ⅜-in., with 7/16-in. pushing for second place. The ½-in. diameter strand seems to be the size limit at the present time. There is definite economy in using the larger size. They cost less per pound of pull, cost less to handle, permit larger aggregate sizes, and provide a greater concentration of prestressing force which can be used to increase the efficiency of design.

A surprisingly small amount of steel is required in roof slabs. For example, a 40-ft. span double Tee can be designed requiring only three ⅜-in. diameter strands per stem. This is the equal to 1½ strands per sq. ft. of roof width. At 6 cents per foot of strand, the prestressing steel costs would be only 9 cents per sq. ft.

The use of lightweight aggregate is rapidly coming into use for pretensioned roof slabs. This has been made possible by better design techniques that produce low concrete stress and reduce problems inherent in lightweight mixes.

Camber control is one of the encouraging trends in the industry. This has come about from a new design conception, as well as better production controls. Ultimate design, counterbalanced bending moments, partial prestressing, and sloping strands are being given consideration by a great many of the designers. When the smoke of another year of discussion has cleared away, we shall have a more clear-cut picture of an acceptable design procedure for the industry.

Since the industry is going to a Tee section for roof members, ultimate design calculations become simplified. The Tee flange in compression is far stronger than the strand. Therefore, strength of steel at approximately 2 percent permanent set times the moment arm gives a conservative and easy calculation of ultimate load.

Another interesting development in design is the balancing of the upward bending moment forces due to the prestressing against the downward bending moment due to the total live load. Using this theory, one moment can be balanced against another. Thus, both top and bottom fiber stresses will "equal out," and the only remaining stress at dead load is the prestressing force divided by the cross section force of the member.

On double Tee roof slabs this theory can be applied very well, so that the two forces will approximately balance each other, with the upward moment from the prestressing steel predominating and therefore giving a slight camber. If the two opposing moments were to be made equal to each other, it would be possible to have a variable modulus of elasticity of the concrete between different pours without causing a variable camber condition from one pour to the next. This feature is particularly attractive as it will allow the producer to release at lower concrete strengths and still not run into camber difficulties.

Roof deck members designed in this manner will behave as fully prestressed slabs up to the point of first crack, which may be in the range of 25 to 30-lb. per sq. ft. live load. As the live loads are increased beyond this point, the member acts as a reinforced concrete design. Therefore, for the higher roof loads, we have a condition which might be called partial prestressing.

The use of sloping strands has helped considerably in enabling the designer to balance the dead load moments against the upward bending moment due to the prestressing force. It has also permitted the center of gravity of steel at end spans to be quite high, thus reducing end span concrete stresses. This sloping strand procedure has also afforded a greater concentration of prestressing force with a higher eccentricity at midspan. Therefore, the use of sloping

(*Continued on page* 204)

*Presented before the Concrete Conference, Case Institute of Technology, Cleveland, Ohio, March 23, 1956.

# 6th Annual Convention of A.C.A.P.A.

President Jerry J. Seale (right) takes over the reins of A.C.A.P.A. for 1956 at the sixth annual convention in Denver. At the left is A. M. Herman, retiring president.

## *Concrete pipe makers discuss irrigation, concrete control, testing at Denver meeting*

THE sixth annual convention of the American Concrete Agricultural Pipe Association, held at the Brown Palace Hotel, Denver, Colo., on April 12-14, 1956, drew a record attendance from the western states.

Papers were presented by two engineers from the Bureau of Reclamation and by Philip W. Manson, professor of agricultural engineering, University of Minnesota. Another interesting feature was a technical discussion of a new specification for irrigation pipelines. Those who participated were Professor Arthur F. Pillsbury, University of California, Tyler H. Quackenbush, irrigation engineer, Washington, D. C., and Lester Lawhon, soil conservation engineer, Fort Worth, Tex.

J. J. Seale, Concrete Conduit Company, Colton, Calif., was elected president of the association for the forthcoming year, taking the office vacated by A. M. Herman of the same company, who served as president in 1954 and 1955. Bruce N. Spencer Jr., Gifford-Hill-Western, Inc., Lubbock, Tex., and Homer Peterson, Rocklite Silo, Inc., Hutchinson, Minn., were elected vice-presidents. Glenn Harriman, Indiana Lock Joint Concrete Pipe Company, Lafayette, Ind., was named secretary; and William B. Freeman, Lock Joint Pipe Company, Denver, Colo., was re-elected treasurer.

New directors chosen for 1956 are Earl H. Eby, Elk River Concrete Products Company of Montana, Helena, Mont.; G. D. Williamson, Valley Concrete Pipe Products Company, Yuba City, Calif.; and Charles E. Ward, Utah Concrete Pipe Company, Ogden, Utah.

James E. Mandry, assistant head of the Canals and Pipe Section, Bureau of Reclamation, Denver, Colo., spoke on *Full Pressure Concrete Pipe Distribution Systems.* Mr. Mandry stated that trunk laterals installed by the Bureau have sufficient capacity, in certain cases, to serve a city of 750,000 people, and that a farm delivery line has enough capacity to provide water for a community of 9,000 persons. (These lines are irrigation water lines, not pressure systems for homes).

The present closed pressure systems, in which regulation is made at the final delivery point, compare quite favorably with the old systems in which the flow of water was regulated otherwise, Mr. Mandry declared. He added that the initial cost of the full pressure system is higher than that of the open system, but that maintenance and regulation costs make the average annual cost equal to or less than the open system. He also discussed cavitation across the valve area, explaining that neoprene-coated surfaces offer protection in the vicinities, and that the use of pressure gauges with the maximum operating pressure indicator is helpful in cutting down on water hammer. The latter depends on pipe material, distance between valves, and valve closing time. In conclusion, Mr. Mandry said that until close pressure systems were inaugurated, joints were a limiting factor in concrete pipe systems, but that the use of modern rubber gaskets, pressure pipe, and joints has eliminated this consideration.

Lewis H. Tuthill, chief of the concrete laboratory, Bureau of Reclamation, Washington, D. C., presented a paper on *Some Aspects on Con-*

(*Continued on page* 205)

The new A.C.A.P.A. board of directors. Left to right, seated: Homer Peterson, Hutchinson, Minn., vice-president; J. J. Seale, Colton, Calif., president; B. N. Spencer Jr., Lubbock, Tex., vice-president. Left to right, standing: G. D. Williamson, Yuba City, Calif., director; W. B. Freeman, Denver, treasurer; and E. H. Eby, Helena, Mont., director.

Distinguished guests attending the sixth annual A.C.A.P.A. convention included (left to right): Lewis H. Tuthill, chief of the concrete laboratory, U. S. Bureau of Reclamation; K. B. Keener, chief designing engineer, U. S. Bureau of Reclamation; Mrs. Keener; and Cris Dobbins, president of Ideal Cement Company—all of Denver.

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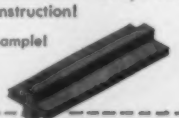

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## Highway Bridge

(*From page* 201)

having remnants longer than a few feet.

The contractor on this work designed the "swift" cars used to hold the coils of strands. "Swifts" are light revolving frames of metal which carry the coils of strand during unwinding, to keep them in place and allow them to feed into the construction as desired. These cars held 25 strands in coils, all paid off through guide plates in the middle of the car as they were drawn through the pretensioning clamps set outside the forms.

Using coils of wire required the minimum amount of space; reels would have been considerably more bulky and would have required a stronger swift car to support the extra weight of the reel. Clamps were used to hold the strand at the jacking end of the slabs as well as at the front end. The design of jacking arrangement was by the Freyssinet Company, Inc., New York, N. Y., consultants for the pre-tensioning bed.

## Pretensioning Trends

(*From page* 202)

strands has assisted materially in increasing the efficiency of the overall design.

Fiber stress in concrete on the prestressed double Tees has been reduced considerably in the last year as a result of all of the refinements in design technique. These lower fiber stresses have aided in reducing the prestressing losses, as well as reducing the tendency for plastic flow of the concrete.

We see today a new industry ready for a large expansion. The ground work over the last three years has laid the foundation for a gigantic manufacturing industry for the production of pre-tensioned concrete roof slabs.

## Western Concrete Pipe Assn. Holds 37th Annual Meeting

Nearly 100 concrete-pipe makers and others with a kindred interest in the industry journeyed to Fresno, Calif., for the 37th annual meeting of the Western Concrete Pipe Association, held April 25, 26, and 27, 1956. Business sessions and social functions centered in the new Hacienda Motel at the north edge of the city. Officers for the coming year, all re-elected, include H. W. Chutter (Jourdan Concrete Pipe Company, Fresno), president; Fred N. Linn (United Concrete Pipe Corporation, Modesto, Calif.), vice-president; and William S. Rogers (Rogers Materials Co., Madera), secretary-treasurer.

The outlook for concrete-pipe sales remains excellent for the next 5 to 10 years in the opinion of Howard F. Peckworth, Chicago, who based his predictions primarily on the federal highway construction program.

Mr. Peckworth, well known to the industry as managing director of the American Concrete Pipe Association, also revealed that a trend toward concrete pipe of larger diameter is significant, particularly for culvert use. Wages of carpenters employed to build forms for poured concrete culverts have risen so high that the use of plant-made culvert pipe now encounters little competition.

In addition to hearing Mr. Peckworth's reports on business conditions and news of developments within the industry, the delegates heard several programmed speakers. They decided to hold their fall meeting in Salt Lake City, tentative dates being set for Oct. 25 and 26.

Speaking on the Los Angeles sewer survey, Henry A. Weigand (Concrete Conduit Company, Colton, Calif.) dispelled a prevalent myth that the 800 miles of concrete-pipe sewers laid in Los Angeles during the period from 1917 to 1934 have suffered failure due to hydrogen-sulphide damage. Most of these lines are still perfectly sound and continue in service, Mr. Weigand reported; and recent tests have proved conclusively that little or no damage has occurred. He also presented a chart which indicated that, in the competitive size range up to 30-in. diameters, clay pipe costs an average of 38 percent more in southern California than does concrete.

E. L. Howard, chief testing engineer of Pacific Coast Aggregates, Inc., San Francisco, described and illustrated some of the painstaking methods his company employs in excavating and processing concrete aggregates. He mildly chided the pipe industry for its lack of simplification in aggregate sizes, declaring his laboratory tests as many as 21 different size blends which are currently demanded by pipe producers.

A new use for concrete pipe—its employment in forced warm-air radiant heating—was described by W. L. Donley, Los Angeles engineer. He revealed that the system is being employed rather widely in California, particularly in schools and churches. It involves the combined use of concrete-pipe ducts and sheet-metal honeycombing in floor slabs. The hot air is generated in a down-flow type of furnace and distributed through the piping.

Several experts at the meeting included (left to right): L. H. Kessler, chief hydraulic engineer, Fairbanks-Morse Pump Company, Kansas City, Mo.; Lester Lawhon, soil conservation engineer, Fort Worth, Tex.; Professor P. W. Manson, agricultural engineering department, University of Minnesota, St. Paul, Minn.; A. F. Pillsbury, professor of irrigation, University of California, Los Angeles, Calif.; and T. H. Quackenbush, irrigation engineer, Soil Conservation Service, Washington, D. C.

## A.C.A.P.A. Convention

(*Continued from page* 203)

*trol and Behavior of Concrete.* He cited these requirements of good concrete for pipe—high strength, superior workmanship, resistance to abrasion and permeability, durability, toughness (as opposed to brittleness), and uniformity. Factors that increase the strength of concrete are lower water-cement ratios, favorable aggregate, mimimum airentrainment, and careful workmanship.

Among factors which reduce permeability of concrete Mr. Tuthill included effective consolidation, adequate curing, and judicious use of admixtures. Resistance to abrasion is improved by all the foregoing factors, and particularly by the use of good, hard, strong, coarse aggregates. The speaker touched briefly on the subject of resistance to sulphates, which is accomplished by the use of Type V cement, by the use of extra cement, by low water-content ratios, by drying the pipe after curing, and by avoiding certain practices, such as reliance on extra Type II cement or on admixtures.

Philip W. Manson, University of Minnesota, was recently named chairman of an A.S.T.M. committee to supervise and recommend revisions to Specifications C118 for concrete irrigation pipe, and C4 for concrete drain tile. Mr. Manson suggested in a brief talk that the committee provide for using C118 irrigation-type of pipe as drain tile in Specification C4.

Professor Manson mentioned the junction studies that have been made recently at the university. These indicate that there is no greater hydraulic loss at a 90-degree junction than there is at a 45-degree junction, when both lines are flowing full and at the same diameter.

He suggested the use of a hydrostatic test to determine the quality of tile, in addition to or in place of some of the present tests. He further suggested a standard quality drain tile and a special or superior quality of tile for use under unusual conditions of exposure or load. He showed results of tests on tile, indicating that a 5-minute absorption test may be more significant than a 5-hour boiling test because the immediate permeability of a tile, rather than the long range permeability, seems to determine its water tightness.

Tyler H. Quackenbush, irrigation engineer, Soil Conservation Service, urged co-operation between the A.C.A.P.A. and the S.C.S. engineers in the development of specifications for the installation of concrete irrigation pipelines. He explained that both irrigation and drainage are benefited by land leveling and conservation practices which are undertaken by S.C.S. This was the first of several meetings between these two bodies of engineers and manufacturers.

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David T. Beals III has been elected vice-president and a member of the board of directors of the United States Lift Slab Corporation and its foreign subsidiary, the International Lift Slab Corporation. As national and international licensor of the Youtz-Slick Lift Slab method of construction, the firm will establish an office in Kansas City, Mo., to be under the direction of Mr. Beal.


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# Memphis Ready-Mix Producer Converts to Propane Gas—

## *saves cost of installation in first year*

By CARL ABELL
Editor, Butane-Propane News

JOHN A. DENIE'S SONS COMPANY, Memphis, Tenn., operates 54 truck mixers out of its three ready-mixed concrete plants in that city, along with 15 miscellaneous truck units. The entire 69-unit fleet was converted to the use of propane in place of gasoline in 1951. Conversion followed a test initially made on five trucks for a 60-day period beginning in August, 1950. In 1952, the first full year of operation, company officials state that the entire cost of conversion, plus depreciation on the storage and dispensing equipment, has been saved, mainly by a reduction in fuel costs amounting to nearly $33,000.

Most of the work of conversion was done during the fall and winter months of 1950 and 1951, the slack season, when vehicles could be taken out of service without loss of revenue. The general overhaul and conversion work were done at the same time at a considerable saving, compared with the cost of performing the two operations separately.

Conversion was accomplished by the regular employees of the company. Engineering service and supervision of this work were supplied by Century Sales Company, Memphis, the firm which supplied the carburetion equipment and vehicle fuel tanks. The design and installation of the fuel dispensing systems used at the three plants was also the work of the Century Company, and included storage, pumping, and metering equipment.

The first five vehicles converted included two GMC Series 650 trucks, and three International K-11 chassis. All were equipped with 5-cu. yd. mixers driven by separate engines. The GMC engines were high-compressioned by milling the heads .125 in., while the International heads were cut .110 in. The auxiliary engines driving the mixers included Ford industrial, Waukesha, and Continental models, which were given appropriate high-compression treatment. All manifolds of these engines were cooled, generally by mechanical separation. The cost of the engine work connected with the conversion was approximately $35 per truck for outside machine work, plus the small amount of labor performed in the company's shops.

Standardized fuel tanks of 60-gal. capacity were used on these units, as well as on all of the large trucks later converted. Labor on the propane installations of the first five jobs, including mounting of fuel tank and separate carburetion equipment for both engines, amounted to 24 man-hours per truck. As the result of experience, the installation time on later conversions of the ready-mix units was reduced to 16 hours each.

Herman Pommer, superintendent of equipment (left) and Henry A. Pommer, vice-president in charge of operations, John A. Denie's Sons Company, Memphis, Tenn.

These first five converted trucks were operated for 60 days under closely controlled test conditions to determine the fuel mileage, and to find out what service problems and expenses might be anticipated. To the surprise of everyone concerned, the fuel consumption proved to be less than had been experienced with gasoline. This fact led to an investigation which disclosed that considerable gasoline was being pilfered from truck tanks. Since similar theft of propane is impossible, the LPG (liquid petroleum gas) units were credited for a saving greater than that represented by the actual consumption in the trucks. This was a very real and important saving in operation cost.

Since it was not necessary to change engine oil so frequently, it immediately became apparent that savings in oil cost would add further to the benefits derived from the conversion. Costs related to servicing and maintenance of the fuel equipment during the test period were insignificant.

Following the successful comple-

Yard view of John A. Denie's Sons Company, showing ready-mix truck equipment and plant (rear); this concrete producer of Memphis, Tenn., has converted all movable equipment to the use of propane fuel.

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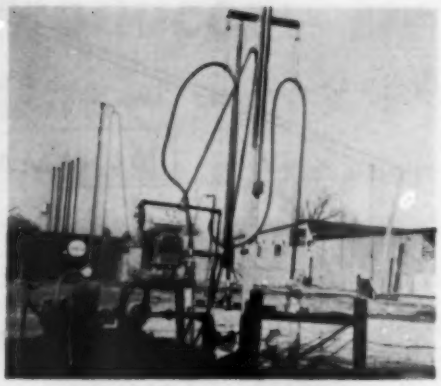

Fuel installation at Denies Plant No. 1. Three 6,000-gal. tanks store fuel for truck dispenser. The service stand is well protected; counter-weighted hoses never lie on the ground.

tion of the 60-day tests on the first five units, Henry A. Pommer, vice-president in charge of operations of the company, and Herman Pommer, superintendent of equipment, decided to proceed with the conversion of the entire fleet. Plant No. 1, which is the center of operations, has three 6,000-gal. tanks, and the necessary dispensing and metering equipment. The fueling setup at Plant No. 2 includes two 6,500-gal. tanks, while the 5 or 6 trucks operated out of Plant No. 3 are fueled direct from a 1,000-gal. tank mounted on a four-wheel trailer. This unit is filled at Plant 2, and towed over to Plant 3 by a truck that comes to Plant 2 regularly to take cement over to Plant 3. This method avoids the necessity for a permanent storage tank at Plant 3, and the fuel supplier has the benefit of reduced delivery mileage.

The permanent storage setups are equipped with 20-g.p.m. pumps and Neptune direct-reading meters. More than 70 carloads of fuel have been pumped through these meters, at a total maintenance cost of less than $15. Hoses are suspended and counterweighted so that they are automatically elevated when not in use. No trouble has been experienced from dirt in the nozzles, since neither the hoses nor the nozzles ever drag on the ground or get under the wheels of the vehicles. There have been no replacements in more than three years of service.

Total cost of the fuel storage and dispensing equipment for the three plants was $17,650. Cost of the equipment purchased for the truck conversions came to $311.50 for each of the trucks equipped with two engines. It included the 60-gal. tank, separate converters, carburetors, filters, electric fuel locks for each engine, and the necessary hoses, tubing, and fittings. Parts for converting the single-engine jobs totalled $286.50. Total equipment investment in the fleet conversion was $20,406, to which must be added the cost of labor as noted above, and approximately $35 per vehicle for engine changes.

Propane purchased for this fleet operation in 1952 consisted of 303,017 gal., and the laid-in price, including federal tax, was $28,786. Fuel used to run the mixer engines was not subject to state tax, so special arrangement were made with the state tax authorities to exempt 40 percent of the fuel consumed by the mixer trucks from the state levy. Full state tax was paid on all propane consumed in the remaining vehicles. With the state tax, the propane cost $41,513. The same amount of gasoline, under the same arrangement, would have cost $74,239, and thus a saving of $32,726 was realized.

Other savings are not yet determinable, as it will be a long time before any of the engines come up for the next overhaul period. Ready-mix trucks do not run very high annual mileages. A total of 25,000 miles is exceptional, and 20,000 is close to the average in this fleet.

There are, however, certain items of savings which are unmistakable. All service work on the carburetors, converters, and other propane fuel units for 1952 added up to $272. The previous cost of maintaining the gasoline carburetors for the fleet ran close to $270 *per month*—a saving of approximately $3,000 per year.

While no attempt has been made to evaluate the saving in time required to service the trucks, Herman Pommer points out that wtih the 60-gal. tanks, refueling is necessary only every other day, whereas with the smaller tanks formerly used with gasoline, it was necessary to fill every day, and on a heavy day's run, two refills were necessary. With the 20-g.p.m. pumps, the entire fueling operation requires less than five minutes, less time than was required to fill the gasoline tank with the slow-speed service station type of pumps formerly used. While the saving of servicing time on one vehicle is not important, it really adds up when 69 trucks must be serviced.

Denie's Company officials are sure that the entire cost of conversion, plus depreciation on the storage and dispensing equipment, has been saved during the first year following completion of the fleet conversion. They point out that it will be at least five years before they are able to determine the reduction in engine maintenance costs; but the savings proved to date in cost of fuel, oil, and carburetor maintenance make a very substantial addition to the annual operating profit.

Lift trucks equipped for economical propane fuel are used in the Denie's Company yards.

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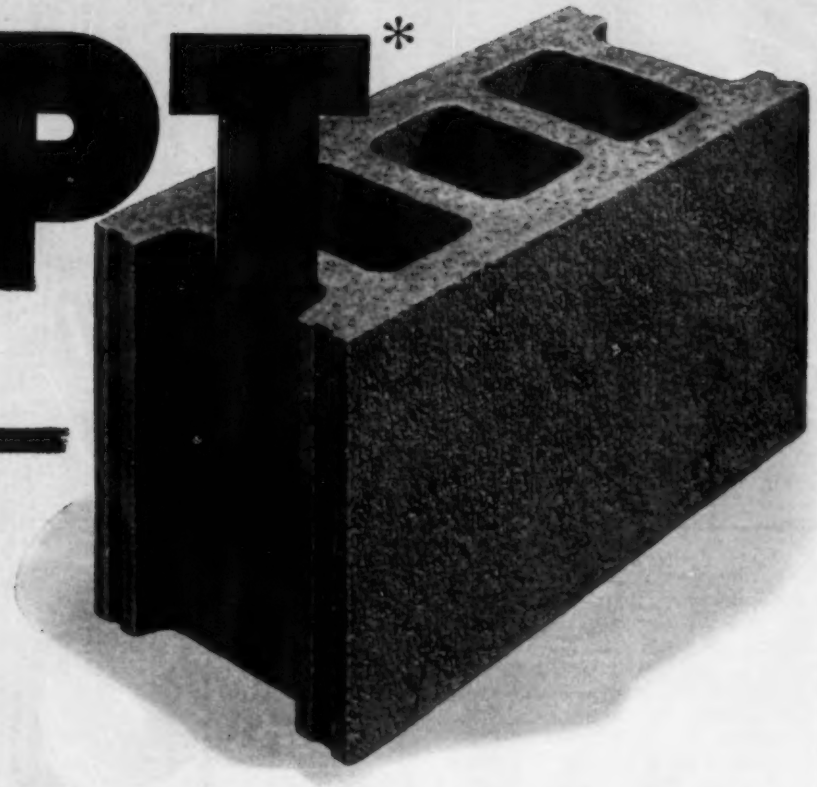

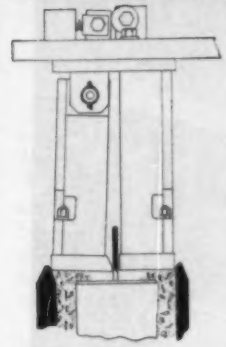

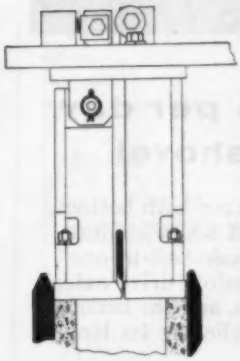

Upper drawing shows swinging stripper shoe contacting thick beveled division plate, ready to move to right — to contact stationary stripper shoe — to produce a block with U.P.T.

Lower drawing shows swinging stripper shoe—after clearing higher core plate — and contacting stationary shoe — ready to strip U.P.T. block.

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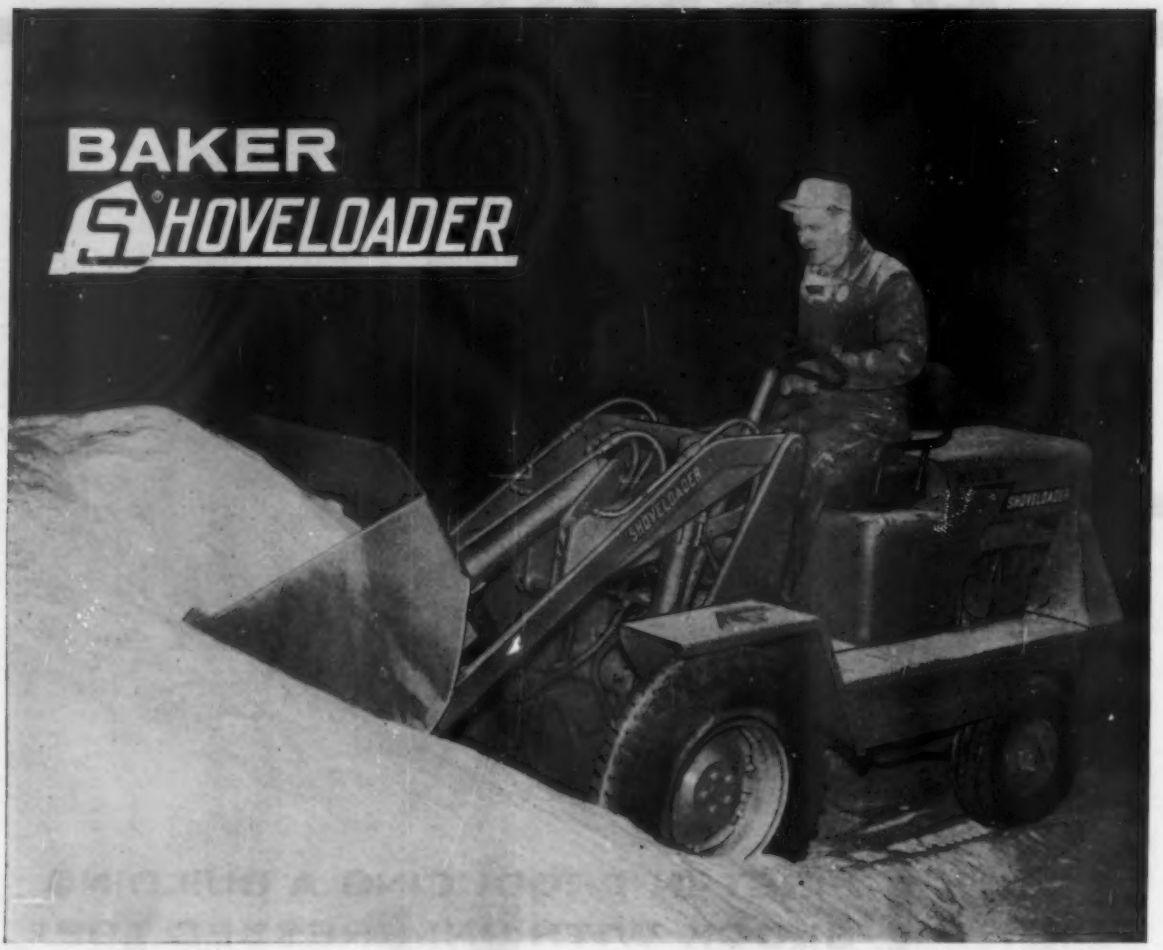


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# AUTOMATION In Material Handling

## *Vancouver R.M.C. Plant A Model Automatic Operation*

EVANS, Coleman and Evans, Ltd., and associates, reportedly the largest concrete operators in Canada west of Ontario, placed in operation in June, 1955, at their ready-mixed concrete plant at North Vancouver, B.C., a material-handling system which comes about as close as you can get to complete automation in this industry.

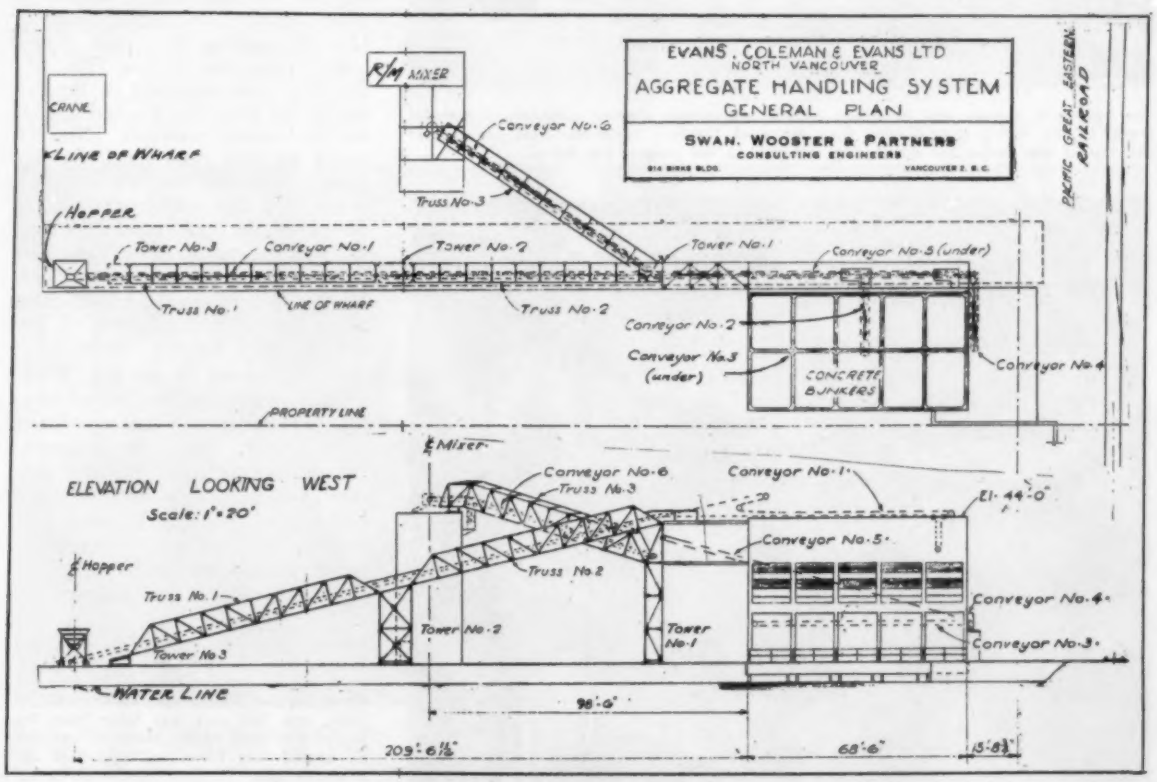
After a year of operation the demand for ready-mixed concrete has been so great that an additional plant is now under construction on the same site. This facility will have a capacity of 1,500 cu. yd. per day, more than double the present capacity of 650 cu. yd. daily. Pending completion of this new plant, which will be reported in detail in a coming issue of the CONCRETE MANUFACTURER, we feel that there are several material-handling features of sufficient interest to our readers to accord them the following brief pictorial description.

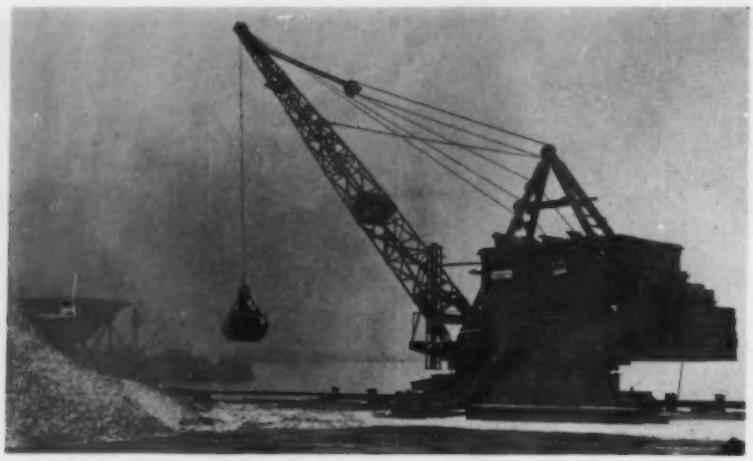
The plant is located on the shore of an inlet from the Straits of Georgia, the company's dock area forming the larger part of the plant. Aggregates are delivered by barge to this dock, while cement presently comes in by barge, rail, or truck, and is received in bags or bulk. A new cement storage silo is included in the plans for the new plant. Aggregates are handled from the barges moored next to the dock by means of a railroad-truck-mounted locomotive crane, equipped with a 50-ft. boom carrying a 1½-cu. yd. clamshell bucket. Stockpiling areas adjacent to the track are available for storage of material upon their arrival.

A single-compartment steel hopper at the extreme end of the main conveyor belt (No. 1) which terminates at the dock edge is sufficiently elevated to feed the conveyor. It is loaded by the crane from stockpiles, or direct from the barges when such procedure does not involve any delay of operations of the concreting plant. The main conveyor, a 24-in. wide belt, carries the materials horizontally about 280 ft. and lifts these to the top of the raw material bunker, a concrete structure 50 ft. high, 60 ft. long, and 45 ft. wide. This bunker is partitioned into five sections, each having two compartments or bins holding different gradations of sand, gravel, or other aggregates.

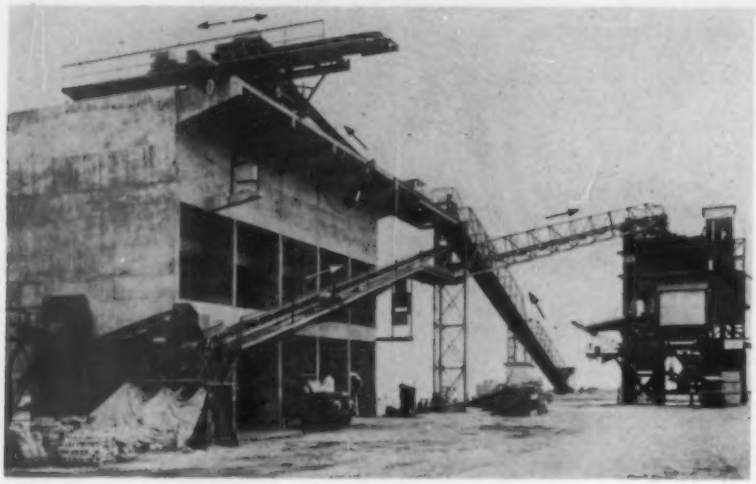
The main conveyor belt No. 1 moves the materials up a 190-ft. slope run before beginning its horizontal run adjacent to the storage bins. A traveling tripper is installed on this belt at the top of the bins; it is equipped with a shuttle cross belt conveyor (No. 2) which spans the distance from belt No. 1 to the center of the bins, and discharges the main conveyor.

An operator's booth at the top of the structure contains controls for all belts carrying materials and affords the operator a good view of

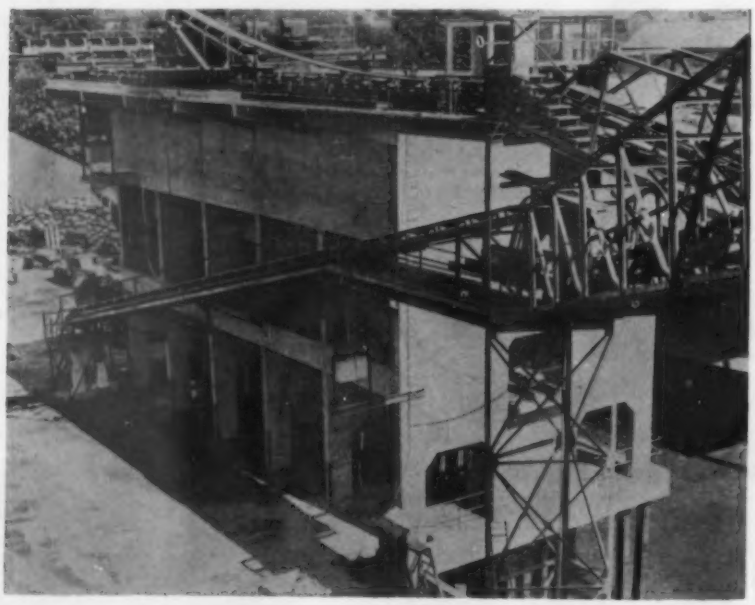




At the ready-mixed concrete plant of Evans, Coleman & Evans, Ltd., North Vancouver, B.C., a railroad-truck-mounted locomotive crane, with a 50-ft. boom and 1½-cu. yd. clamshell, unloads aggregates from a barge to storage piles.



The aggregate storage and reclaiming system, with arrows showing direction of material travel to the mixing plant (right) from the dock (center). Note the cross conveyor at the top of the bunker for distributing materials to the proper bins below.



Another view of the materials storage bunker. Note the movable tripper arrangement (arrow) on the main belt (top) for filling any bin. The control house is at the right, top. This view was taken from the top of the mixer house. Materials can also be chuted into trucks for aggregate delivery to jobs.

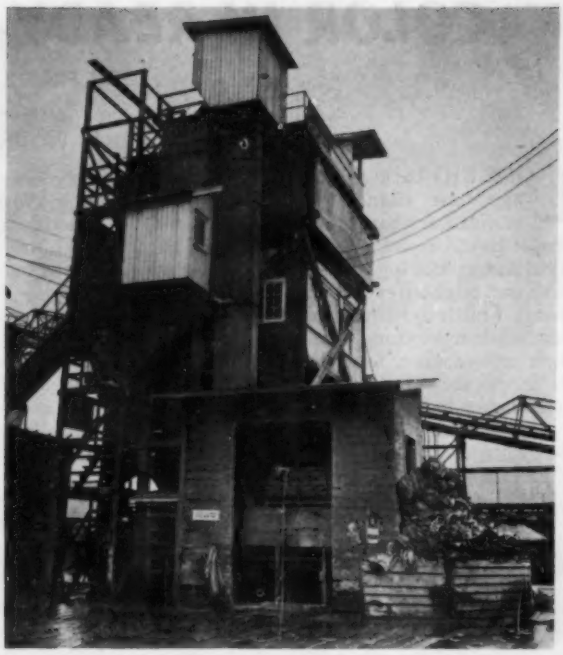
the entire area from the barges at the end of the dock to the trucks taking concrete from the ready-mix plant. The shuttle belt controls the discharge to either the near or far row of bins, electrical controls in the booth setting the tripper and its shuttle in any one of ten possible combinations to discharge into the desired bin. Discharge of materials from the shuttle belt goes through a swing spout into the proper bin.

Getting the material from the bins to the ready-mixed concrete plant requires four conveyors and six air-electric, solenoid-controlled chute gates under the bunker bins. Each gate is so located that any one of four adjacent bins above it can be discharged through it. A single push-button sets the four conveyors in operation *via* three pneumatic timing relays connected in the conveyor motor-control circuit. This control board is installed in a control booth at the top of the ready-mix plant in such a position that the operator can see the four conveyors, and the gates under the bins at all times.

This sequence stop-and-start control sets the conveyors in motion at 10-second intervals, the last conveyor (No. 6) starting first, then in sequence, the next in line (No. 5), the short cross conveyor at the far end of the bins (No. 4), and finally, the reclaiming conveyor (No. 3) under the bins, onto which the bin gates permit the flow of materials. When this last conveyor starts, it completes the gate control circuit, so that the proper gate can then be opened for delivery of materials to the mixing plant. These gates close automatically if one of the belts is down for any reason.

All conveyors in use are 24-in. units equipped with Stephens-Adamson 745 carriers. They have welded steel frames and interchangeable rollers, and are equipped with precision ball bearings protected by die-cast labyrinth seals. The carrier rolls can be removed for inspection or repair without the use of tools. The control equipment was supplied by

A closeup of the discharge end of the cross conveyor, and the control house at the top of the storage bins, showing aggregates going into the bin at the lower left from the movable swing spout, which distributes materials to a series of ten bins.



The ready-mix mixing plant, showing the conveyor (left) bringing in aggregates from storage bins, and sacked cement (or bulk hopper) at the center, also the elevator for raising cement to the overhead bins.

Allen-Bradley Company, Milwaukee, Wis.

The ready-mixed concrete plant is fully automatic, supplying either plastic concrete or dry batches to the truck mixer units. All chutes in the plant are of air-ram units. Cement is charged and weighed automatically, and all proportioning of aggregates is done by automatic weighing devices, which allow the predetermined quantities of aggregates and cement to flow by gravity to the weigh batcher through closed chutes. When all materials are in the batcher, they are discharged into the plant mixer below, and when mixing is complete the concrete goes down directly into the drums of the truck mixers. Dry batching loads are chuted to an adjacent truck space for mixing *enroute* to the job.

Cement comes from the British Columbia Cement Company, Ltd., Vancouver Island, B.C., and is de-

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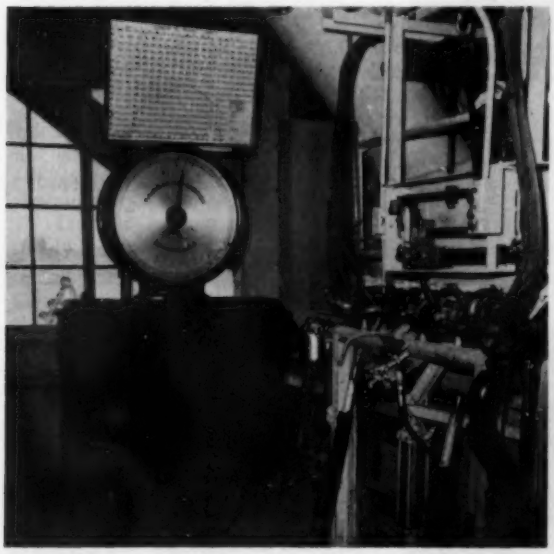


Weigh batcher controls for aggregates and cement in the mixing house. Note the chart on wall, which provides the operator with quantities and weights for any mixture required, and the visual scale dial for direct reading of weights.

A view of the weigh-batcher set over the plant mixer, showing the quadrant air-electric, solenoid-controlled gates at the discharge end of chutes from the storage bins. These gates are controlled by air-hydraulic action.

# COLOR IN READY-MIXED CONRETE

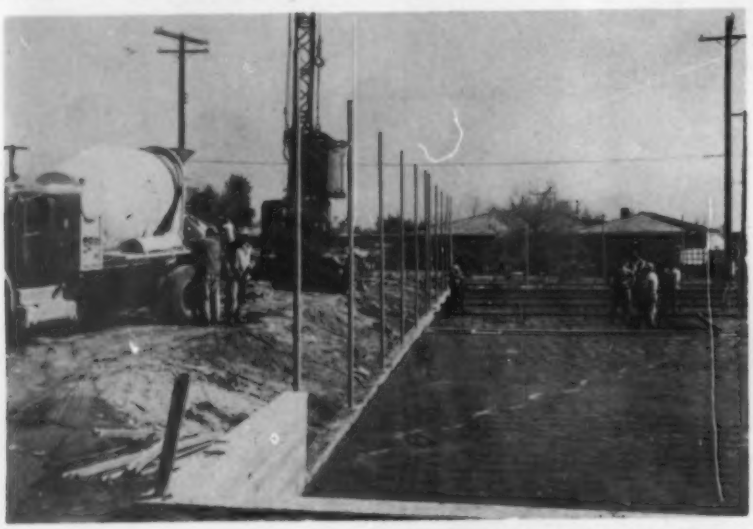
By FRANK D. DAVIS
and
F. W. DRURY JR.

LOOKING back a decade or so ago, one cannot escape the realization that the American people have become extremely color conscious, exhibiting the desire to enliven and brighten everything around them. This trend has manifested itself in their clothing, the color of their automobiles, and the interior decor of their homes; and it has spilled over to brighter colors on the exteriors of their homes, roofs, and fences.

Overlooked up to now, however, has been the opportunity to lend color to the enormous masses of concrete poured every day around us. Sidewalks, terraces, patios, swimming pool decks, driveways, slabs for homes and factories, tilt-up panels, highways, under- and over-passes are around us everywhere in this "concrete age." And practically all of this concrete is being poured in its natural drab and lifeless gray, despite the fact that the cost of integral coloring is only nominal, while its esthetic value to the community can be great.

Discussions of the psychological effect of color upon the human mind and senses fill many volumes, yet the application of this knowledge has in many cases not yet reached the level of actual benefit to the public. In our opinion, since the cost of colored concrete is only slightly higher than the cost of the ordinary gray type, the public would exhibit little sales resistance to colorful concrete; in fact, would demand it, if the idea were properly merchandised.

Reinforced concrete tennis court slabs being placed in Arcadia, Calif. The colored concrete was mixed and delivered by truck mixers. Pozzolan and a water-reducing agent were employed in the mix, as recommended in this article.



What are the benefits to the buyer of colored concrete? Colored concrete in home planning can be made to harmonize with the color scheme of the structure. Color in sunlit patios eliminates glare and renders their use more enjoyable. In tilt-up construction, color can eliminate painting. In garage floor slabs, parking lots and filling stations, colored concrete strips create permanent parking divisions. In highways it can be used to break up the monotony of travel, to make permanent warning signs in the road surface, and to facilitate the division of traffic by urging drivers to follow the red, blue, or green surface. Color can also make retaining walls more attractive, tint tennis courts permanently, and permit the landscape architect to materialize his dreams.

And the benefits to the ready-mix operator? In certain instances, color can sell the job. Visualize, for example, a parking lot where concrete and black-top will compete. If the stall markers can be permanently poured into the slab and the surface made to blend in with the color scheme of the building, concrete will get the job. Generally speaking, the ready-mix operator's sales volume is limited to the number of trucks he is operating and the number of cubic yards he can mix and deliver.

The actual cost to the ready-mix operator for the coloring material is in the range of 50 cents to $2.50 per cu. yd., depending upon the shade or intensity of the color. Experience indicates that an acceptable selling price for colored concrete can be appreciably more than for plain concrete, perhaps several times the cost of the additives themselves. Without increasing his investment or overhead, the producer can make colored concrete yield a greatly expanded margin of profit.

(*Continued on page* 222)

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# Capitol Concrete Co.

## Florida Prestressing Plant Utilizes Modern Technique In New Central Casting Yard

THE plant of the Capitol Concrete Company, Jacksonville, Fla., here described and illustrated, gives an excellent picture of the operation of a central casting yard where modern equipment and techniques are used in the production of prestressed double Tee-beams and other prestressed members. Before describing the operation in detail, it is well to consider some basic facts responsible for the tremendous progress which this segment of the concrete industry has made in the last decade.

Increasing labor and material costs have set in motion engineering and construction methods that bid fair to revolutionize the construction industry. The centralized mixing plant, which permits concrete to be delivered to the job in mixer trucks, has been found a logical location for a casting yard producing prestressed concrete members. Now that the many advantages of prestressed concrete units have been compared with ordinary structural steel and cast-in-place reinforced concrete, architects and engineers have been quick to accept this new type of concrete as a means of reducing construction costs.

As a result of this acceptance, casting yards for prestressed concrete members are being constructed in an increasing number of locations. Florida, perhaps, has done more than any other one state in the development of the theory and practice of prestressed concrete. Therefore it is not surprising to find that the University of Florida has done much experimental work on design and construction of prestressed concrete, and that organizations in that state have aided in the practical development of this new building art.

Prestressed concrete has many advantages over poured-in-place reinforced concrete. These advantages can be briefly stated as follows:

1. Longer spans are made possible because of the more efficient use of steel and concrete.

2. Shallower beam and slab depths can be used, since the entire sectional area of concrete is made effective. This means greater headroom with the same floor-to-floor measurements, or decreased height of building for fixed floor-to-floor ceiling heights. In bridge construction this shallower construction is particularly advantageous in many ways.

3. Dead load of the structure is reduced for the above reasons.

4. Greater live-load-carrying capacity results because of advantages of 1, 2, and 3.

5. Freedom from tensile cracks in concrete beams and slabs. This precludes corrosion of steel due to invasion of moisture and salt air and insures longer life.

6. Rapid construction. Girders, Tee-beam slabs, and columns can be cast and cured rapidly for quick high strength while the foundations are being put in.

7. Greater overall construction economy.

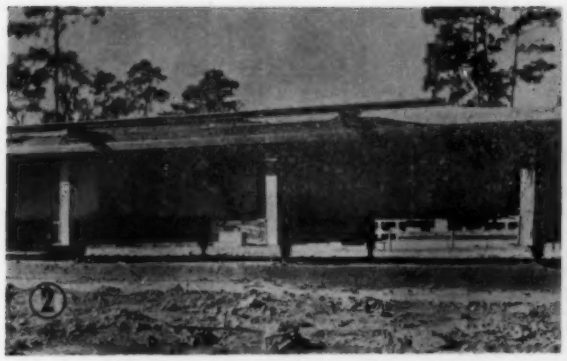
In addition to the above items, there are other advantages that can be obtained by the production line methods of precasting and curing units in standardized steel forms on specially prepared casting—(1) reduced cost of formwork; (2) accuracy of member sizes; and (3) reduced cost of placing concrete.

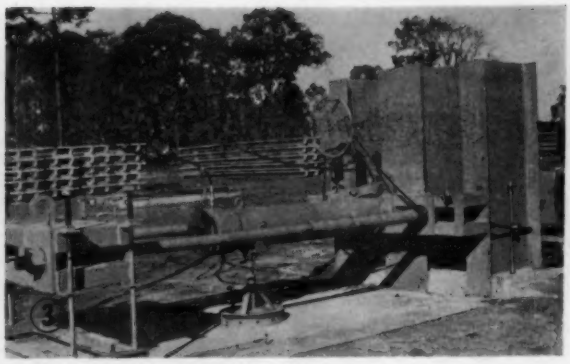
Generally speaking, the lower two-thirds of the depth of a reinforced concrete member (specifically that portion below the neutral axis) is almost useless in resisting the tensile stresses resulting from the bending moments developed under load. By prestressing a concrete member, the entire concrete section is placed under compression and becomes effective in resisting deformation. Herein lies the reason for its many advantages.

The high efficiency in material use with prestressed concrete permits the construction of double Tee-beam roof slabs of 60-ft. spans with a depth of only 14 in. and the use of only 0.011 cu. yd. of concrete per sq. ft. of deck area.

The most efficient type of reinforcement for prestressed concrete has been found to be twisted strands made up of 7 wires of small diameter. The wire making up the strands must be of high ultimate strength (at least 250,000 p.s.i.). By anchoring the strands at one end and attaching a tensioning mechanism (either hydraulic or mechanical type) at the other, a uniform stress can be developed in each strand. Then a high-strength, plastic mix of concrete is poured into the form. For best results the concrete should possess low drying-shrinkage characteristics; it should have the proper amount of air-entraining agents added, and should be vibrated to produce a more plastic mix.

After the concrete has been cured to a predetermined strength, the strands are released at both ends, and the prestress in them is transferred to the concrete through bonding action. The wire strands are distributed through the concrete section for greatest effectiveness and tend to contract after release, thereby transferring the tensile stress induced in





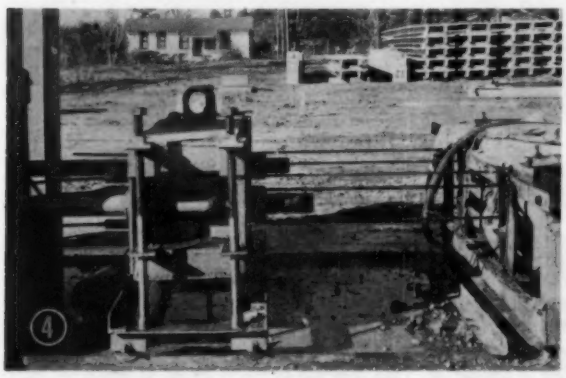
them to compression in the concrete. This compression and the camber induced in the member prevent the formation of tension cracks in the bottom portions of prestressed units, even under working live loads.

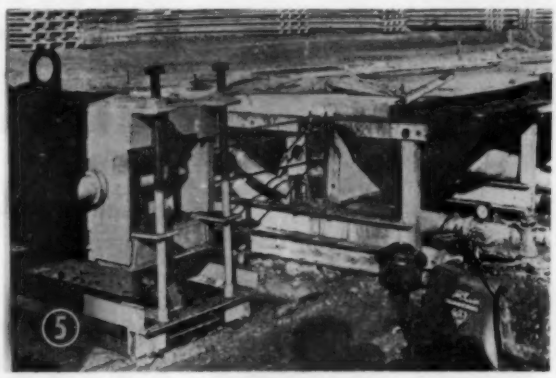
Long central casting yards are most economical. Centralized mixing plants and casting beds of lengths up to 420 or 450 ft. allow a number of units to be prestressed and cast at one time in one long steel form, with header blocks set at the desired intervals. Such a layout allows 10 or 12 units of 40-ft. lengths to be prestressed, cast, and cured at a considerable saving over the single-unit operation. For example, steel forms 420 ft. long for casting double Tee-beam units will cost upwards of $16,000 in place. Amortized on a basis of 1,000,000 sq. ft. of product, the form cost per cu. yd. of concrete will be a small fraction of the cost of poured-in-place forms.

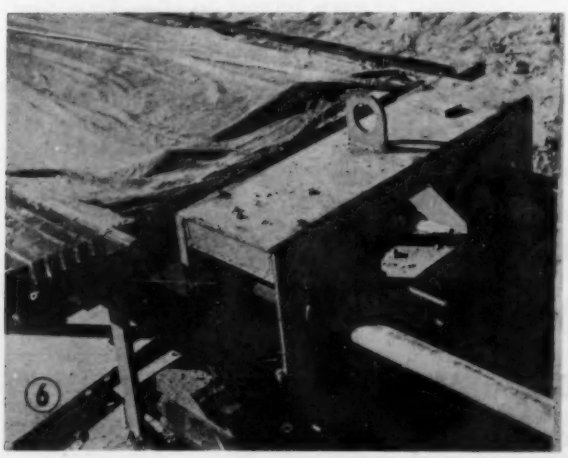
The following descriptions of the accompanying pictures will best illustrate the points of interest in the operation of producing prestressed double Tee-beam units at the casting yard of the Capitol Concrete Company. The all-steel Form-Crete system referred to has been developed by the Florida Division of the Food Machinery and Chemical Corporation, Lakeland, Fla.

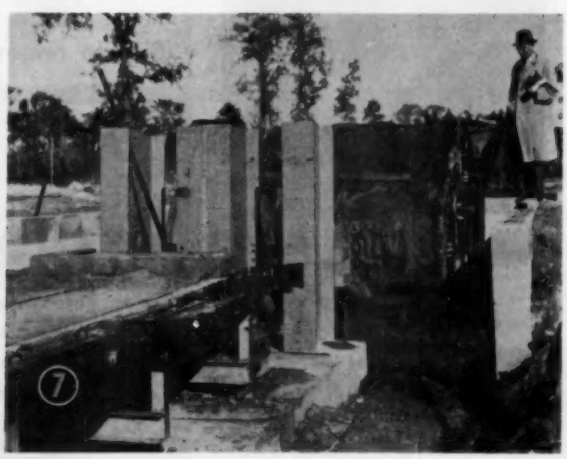
1. A general view of the 420-ft. prestressing bed which utilizes hold-down devices to produce a catenary effect in the upper reinforcing strands by deflecting them at the mid-point of the member. The deflecting plates help to permit accurate camber control and are left in the cast units. This all-steel form bed is a semi-portable installation manufactured in 30-ft. lengths with bolt-together assembly.

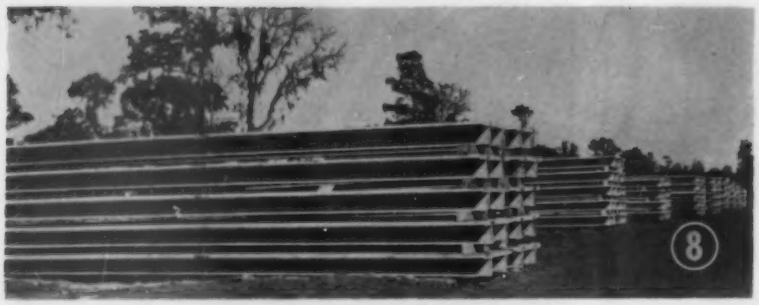
Elongated slots in the mounting feet allow for maximum thermal expansion when required heat for cur-












ing the product is applied to the casting bed. The steel forms rest on a prestressed concrete bed 8 in. thick to increase the operational life of the casting bed. In areas where freezing and depth of frost penetration must be considered, this prestressing of the bed will eliminate excavation and construction below the frost line.

2. This is a closeup side view of the all-steel casting bed with the superstructure mounting frame, the side insulating panels having been removed to show the method of mounting. By using 1-in. threaded mounting bolts with a lock nut on the bottom side of the expandable mounting foot plate, expansion and contraction during the curing operation is permitted. By adjusting the elevating nuts on the mounting bolts, complete control on bed alignment is made possible. In reinforcing the casting bed, two rows of 7/16-in. diameter strands were used, in a 6-ft. width of slab, five cables in the bottom row and four in the top.

3. The jacking end of the double Tee-beam prestressing bed. The hydraulic jack has a rated capacity of 200 tons. The steel jacking rods pull the initial tension on the prestressed cable lock-up plates. Then split nuts are run up on the header cross-bar against the end abutment, thereby locking the cables in a fixed position with maximum tension applied. Note the No. 50 roller chain-and-sprocket drive for fast adjustment of the split-type lock nuts. A paper Sonivoid tube is slipped over the jack screws to protect the threads. The jack screws are supported on a traveling dolly carriage which moves on a steel track as hydraulic pressure is applied.

4. The jacking end (forward side) of the steel, lock-up plate carriage with steel strands in maximum tension. By adjusting the four-point corner adjusting screws, the jack carriage rod height may be varied to any desired cable location in the form.

5. A 4-in. Form-Crete filler channel can be seen in the end of the Tee-beam form. This allows the producer to manufacture prestressed concrete beams to fit any desired depth. The Form-Crete pyramid channel system is manufactured in 3- and 4-in. depths. Separation header blocks are placed in the forms to give the desired length of beams, with enough space between to allow for cutting the strands after concrete has attained its proper strength.

6. The opposite end of the casting bed has the end lock-up plate and strand vice system. This end of the abutment anchor, with the steel rods, is a permanent installation and does not travel, although the rods have threads for any desired adjustment.

7. The end abutment, with cable storage racks behind. The arrangement of the cable storage racks is being studied by Lewis C. Thomas, Thomas Concrete Pipe Company, Oklahoma City, Okla. With this type of cable storage all cables needed for one pour can be pulled out at one time, the cable lock-up pulling plate being handled by a traveling crane.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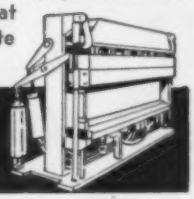

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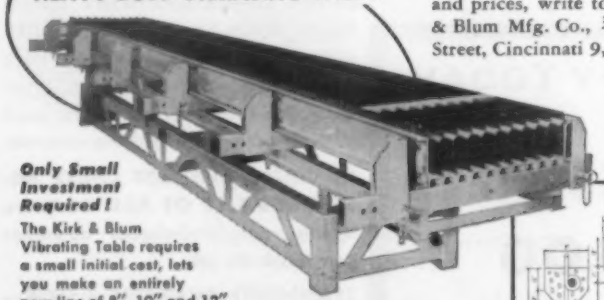
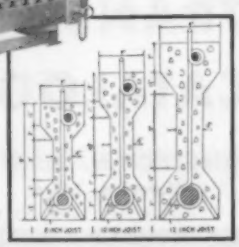
Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.



*Only Small Investment Required!*

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.



KIRK & BLUM

*Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road*


This method reduces to the minimum the cost of placing the necessary strand cables.

8. A stockpile of double Tee beams for a school roof to be erected in the Jacksonville area. These beams are 36 ft. long with a 48-in. wide deck slab 2 in. thick and with an overall depth of 10 in. The beams are produced with three 7/16-in. diameter prestressing strand cables, with the upper cables deflected in the middle portion of beam span.

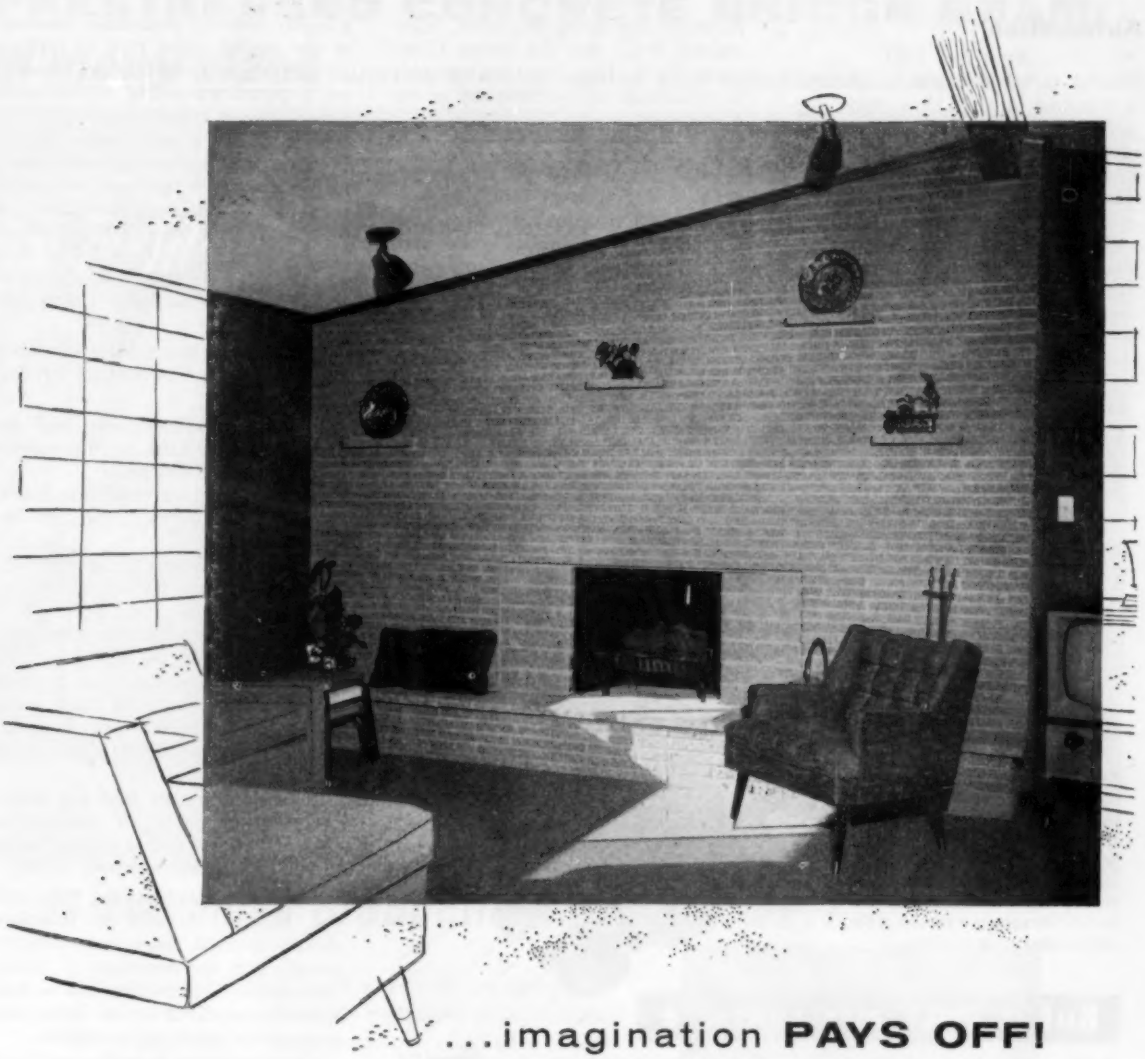
### Efflorescence on Masonry—Causes and Prevention

Efflorescence is visible when soluble alkali salts have been deposited on the outside surface of masonry walls in the form of whitish powder. Chemically, it consists mainly of the partly soluble alkali salts which are bled to the surface by capillary action of water or moisture moving from the interior of the wall to the outside surface. This water has penetrated, in the first place, because of a permeable condition in the materials forming the wall. Regardless of the materials used, it is the physical condition of the wall which allows the action to take place. The deposit occurs during or after the curing period; it is left there when the water which conveyed it to the surface evaporates.

Efflorescence usually appears after long rainy periods and during slow-drying weather. High moisture which has been retained in the masonry for a long period tends to dissolve the salts; and in warm, dry weather the moisture is drawn out to evaporate. As it evaporates, the salts contained in the solution will come to the surface. The condition is seldom seen in warm, fast-drying periods of weather, as in such cases the evaporation of the salt-carrying water or moisture occurs so quickly that comparatively small amounts of salts are brought to the surface.

When an exterior wall is finished in cement stuccos, colored cement paints, or in any colored coatings, the appearance of efflorescence is particularly objectionable. The most important of the factors contributing to the amount of efflorescence is the amount of water present in the masonry materials. The contact with the air at the surface of the wall changes the characteristics of the salts and they become insoluble at that time. Therefore, in order to remove efflorescence, it is necessary to use a 10 to 20 percent solution of muriatic acid and water, scrub with an ordinary scrub brush, and then

(*Continued on page* 224)



## ...imagination **PAYS OFF!**

The split block fireplace lends warmth and beauty to this concrete masonry living room. A product of someone's imagination, it's just one example of the unlimited combinations that are possible with concrete units of various shapes and sizes.

When you suggest imaginative combinations like this for your masonry units, you step out in front of competition . . . develop new business that pays off in easier, more profitable sales.

For the most profitable production, include Lehigh Cements in your plans. Remember there's a Lehigh Cement to help you produce quality units with any manufacturing process.

- LEHIGH PORTLAND CEMENT
- LEHIGH AIR-ENTRAINING CEMENTS
- LEHIGH MORTAR CEMENT
- LEHIGH EARLY STRENGTH CEMENT

**LEHIGH PORTLAND CEMENT COMPANY**
ALLENTOWN, PA.

## Automation

(*From page* 213)

livered in paper sacks or bulk. It is dumped into a below-grade hopper, from which it is fed into an elevator and carried to the overhead bins above the weigh batcher. Twenty truck mixer units are used in delivering concrete within a radius of about 30 miles from the plant. There are approximately 120 persons in the organization, including the company's other operations in Victoria, B.C., and other points. The conveying system was developed by the Stephens-Adamson Manufacturing Company, Aurora, Ill., in cooperation with Swan Wooster & Partners, consulting engineers, Vancouver, B.C., and the Evans Company. G. A. Jardine is the manager of operations of the company in the Vancouver area.

## Color in Concrete

(*From page* 214)

To insure maximum results in colored concrete, judicious compounding and selection of the proper raw materials are indicated. In the Los Angeles area one ready-mix operator has recognized the possibilities of integrally-colored concrete and has worked out a formula using pozzolanic materials and water-reducing agents as admixtures. He employs a highly-reactive pozzolanic material of the opaline-silica type to replace 15 percent by weight of the cement, on a pound-for-pound replacement basis, without reducing strength except in the very early stages, yet at the same time he has improved many characteristics of the fresh and cured concrete. A water-reducing agent is also employed to multiply these advantages. It has been found that a suitable pozzolan plus a water-reducing agent contributes these advantages:

1. Markedly increased workability and finishability, important for colored concrete.
2. Reduced efflorescence and deposit of soluble salts on the surface of the finished concrete.
3. Minimized segregation or bleeding, therefore better quality of finished surfaces.
4. Protection against reactive expansion in areas where reactive aggregates are used.
5. Fewer cracks due to shrinkage.
6. The quality of the color obtained with pozzolan and pigment seems to be a uniquely clear color, which is unobtainable with pigments alone; use of pozzolan requires less pigment.
7. Elimination of leaching where the colored concrete is exposed to alternate wetting and drying as in the case of swimming-pool decks.

It must be emphasized that only the highest quality of pozzolans should be used, since such concrete usually gets the minimum of curing. Strength of the concrete can be dangerously impaired by the indiscriminate use of mediocre pozzolans.

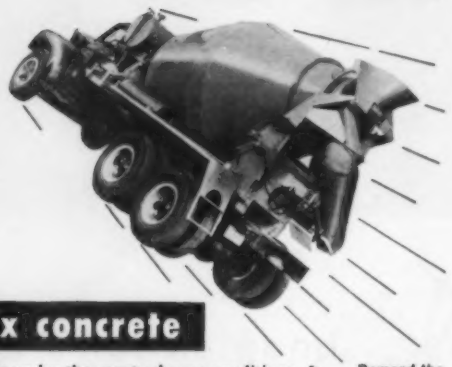
Contamination is easily prevented, in the event the truck-mixer is next dispatched with a load of a different color, or of regular concrete. About 10 gal. of clean water is rotated in the mixer drum after a load of colored concrete has been discharged. Thus the drum can be cleaned on the return trip to the batch plant, where it is emptied.

The immediate success of such pozzolanic-colored concrete has resulted in its being chosen for the repaving of concrete sidewalks on Hollywood Boulevard in the California film capital. The sidewalks will be composed of large squares, laid in a checkerboard pattern, using alternate light tan and chocolate brown concrete. In the centers of some of the squares, a turquoise-colored star will be cast and inscribed with the name of a Hollywood film celebrity. The glamorizing job is scheduled to start at once and to be completed by this autumn.


**No — the New ROCKET will NOT fly to the moon**

*25th Anniversary*

That's right.
And for the sake of honesty in advertising, there are other things the Rocket will not do. It will not operate satisfactorily under water; it will not quadruple your profits within 24 hours; the Rocket's rate of charge will not exceed the speed of sound. The new Rocket will not compete in the 1957 Olympics as a member of the interplanatory space squadron.



**But it WILL mix concrete**

It will mix it quickly and properly under the most adverse conditions. It will also agitate quite successfully.

Owners (of Rockets) tell us this mixer (1) requires surprisingly little maintenance, (2) has every ease-of-operation feature (at no extra cost).

We honestly believe you'll agree that the Rocket is a fine mixer at a reasonable price that will give you better-than-average performance for a long, long time. *There's a Rocket to fit every Pocket(book), too.*

Demand the Badge of Dependability

**ALL THESE FEATURES *at NO EXTRA COST!***

Hydraulic Chute Control is fully automatic. Controls grouped for easy access.

Aluminum Extension Chute attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

Electric Revolution Counter kit included, you can handle most specifications with the Rocket!

Special Alloy, abrasion resisting steel used at all wear points.

Unobstructed Hopper, for rapid charging, no spilling or waste.

Positive Chain Drive, flexible power, not affected by truck twist, road shock.

Standard Industrial Engine, truck-type transmission. Repair parts readily available.

Three-Point Suspension, one-piece cast steel precision machined ring.

**CONCRETE TRANSPORT MIXER CO.**

4000 FYLER AVE., ST. LOUIS 9, MO.
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**MAIL THIS COUPON TODAY!**

Gentlemen: Please rush full information, prices and terms on the following:

☐ New Rocket Revolving Drum Truck Mixer
☐ Hi-Lo Stationary Drum Mixer
☐ Batching Equipment ☐ Water Meters
☐ Material Handling Equipment

CM

Name.....
Firm.....
Address.....
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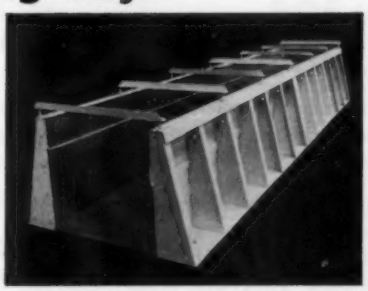
# PRESTRESSED CONCRETE BRIDGE BEAMS

## *in many sizes* WITH A SINGLE 300 to 400-FOOT INSTALLATION OF...

## *Now-mass production in a big way!*

The newest addition to the Form-Crete line (illustrated at the right) has been carefully engineered to provide the utmost flexibility for mass production of all sizes of rectangular bridge beams. Designed to withstand maximum operating and casting deflection loads the basic forms produce a rectangular beam 33 inches wide and 36 inches deep. Additional casting pallets are available in several widths and heights, enabling the manufacturer to cast all practical sizes of rectangular bridge beams utilizing the same single set of side forms. This economy feature, coupled with the uniform accuracy of all Form-Crete castings are but two of the many advantages that contribute to Form-Crete superiority. Investigate this new way to greater prestressed concrete product profits.



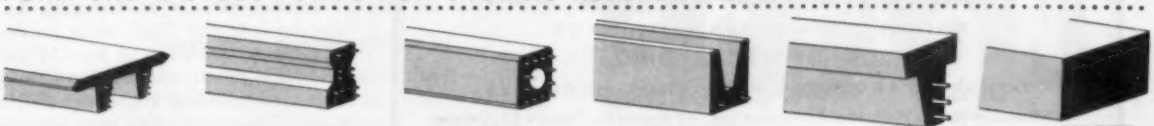
These Form-Crete rectangular bridge beam side forms and pallets are manufactured in 10-foot lengths for handling ease and are designed to produce a product that meets the demands of modern construction.

*SEND FOR* **FORM-CRETE BULLETIN 100**

PF-4

**FOOD MACHINERY**
AND CHEMICAL CORPORATION
**FLORIDA DIVISION**
*LAKELAND, FLORIDA*

**FORM-CRETE STEEL FORMS FOR CASTING REINFORCED OR PRESTRESSED CONCRETE**



DOUBLE "TT" SLABS | BRIDGE BEAMS | SQUARE AND OCTAGONAL PILING | HOLLOW AND SOLID LINTELS | SINGLE "T" JOISTS | PAN TYPE BRIDGE DECKS

**Efflorescence on Masonry**

(*From page* 220)

rinse thoroughly with water to remove the acid.

Water or moisture present in masonry walls may have entered in any one of several ways. During construction the wall may have been exposed to the rain or snow, a condition which allowed infiltration of water into the interior of the wall. Improper flashing of the parapet walls at the roof line might have permitted water to seep down into the interior and remain there. Leaky gutters or spouts will provide a path for entry of water into the wall, especially where flashing is damaged or inadequately installed. Moisture may seep up the base of the wall from earth contact, entering the wall at cracks or poor mortar joints in the wall. Poorly constructed or improperly installed cornices or sills also present points of entry.

Regardless of how the water first entered the interior of the wall, it is quite necessary to eliminate the paths it might have followed in getting in, before any control of efflorescence is of any value. The water content of the wall must be reduced to the minimum as soon as possible in a new wall, since the longer the salts are in contact with water the greater will be the amount which will dissolve and come to the surface with the solution.

In this connection it is important that the following precautions be taken to reduce the amount of efflorescence to the minimum:

1. Wet masonry surfaces should be allowed to dry thoroughly during slow-drying weather.

2. Cement base coats should be allowed sufficient time to cure, and no finish coats should be applied until the base coats are thoroughly dry. Then, if necessary, excessive suction can be controlled by dampening (but not saturating) the surface to be finished.

3. As little water as possible should be used in the mixes of the cement stucco or cement paint coats.

4. During the months when humid, rainy, or slow-drying weather prevails, masonry may contain sufficient moisture so that pre-wetting before application of cement coatings, cement paint, stucco, and cement base coats, may not be necessary. As a rule, all unpainted masonry and concrete surfaces of masonry materials contain a certain amount of moisture, this amount varying with weather conditions.

An easy test to determine whether the amount of moisture in the wall is excessive, is to apply a sample of the coating to be used, direct to the masonry surface in question. If, after several days, there is no indication of white powdering, chalking, or softening of the coatings—indicating the presence of efflorescence—it may be assumed that pre-wetting or dampening of the surface is not necessary.

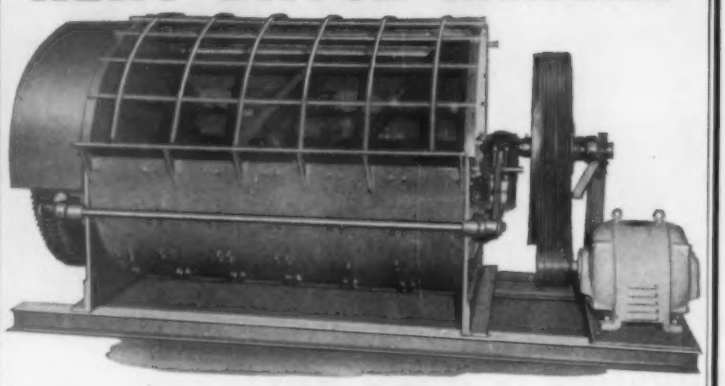
With respect to reduction in the capillarity of materials, water repellents employed as integral admixtures are effective in reducing the rate of capillary transmission and in many cases offer the simplest method of controlling such moisture movement. Other inclusions to reduce capillarity are air-entrainment agents, which create air voids providing a barrier to the passage of water by breaking the capillary passages.

---

The Schwartz Supply Company Incorporation, New Orleans, La., has become the 32nd plant to join the Texas Industries of Fort Worth. This is a 25-year-old ready-mix business and building materials distributor. Texas Industries now operates plants in five states.


*12 Cubic Foot to 75 Cubic Foot*

**KENT BATCH MIXERS**



This large capacity mixer combines features that assure safe, convenient operation and large output of thoroughly mixed concrete *economically.*

Gearing is precision cut. Motor, positive action clutch, belts and bearings are specially designed for heavy duty. Motor and bearings are sealed to exclude dust and grit.

Mixing blades are a superior quality of cast steel. Liners are of sectional type cast from NI-HARD metal, in the larger size mixers. They will render exceptionally long service and may then be replaced easily.

Write for information regarding the complete Kent line of Batch Mixers or Kent Continuous Mixers if interested in this type.

**See**
**KENT MACHINERY IN OPERATION**
**Right In Your Own Office**

**Just Ask Our Representative to Bring His Movie Projector**

*The* **KENT MACHINE CO.**

DIVISION OF THE LAMSON & SESSIONS CO.

CUYAHOGA FALLS, OHIO

CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

# America has homework to do!

THERE'S PROBABLY a lot about your town that makes you want to brag a bit about it.

But there's one thing you *can't* be proud of. And it's a shame you share with just about every other community in America.

The homes where far too many people live are a disgrace. Slums, semi-slums, housing blight are with you. Fixing them up is the homework to be done.

If your town is like most in the U. S., here's what the figures show: 1 out of every 10 homes are rock-bottom slums. Nearly one-half urgently need basic repairs.

But slums are something that is happening on the other side of town, you may say. The problem isn't mine.

### Slums are YOUR homework

Distance is no barrier against the threat and cost of housing blight.

Your taxes go up because it takes more money for your town to fight the diseases and delinquency and poverty spawned in the slums. The security of your family goes down because the slum is the natural parent of crime.

### Where your business comes in

Every firm has a responsibility toward the town where it's located. Part of it is to support community improvements as any other good citizen would.

Some slums are beyond repair. They must be torn down and a fresh start made. Others can be made to conform to accepted living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Civic and individual groups must have business backing . . . *your* firm's backing if they are to succeed.

### Follow the course of Action!

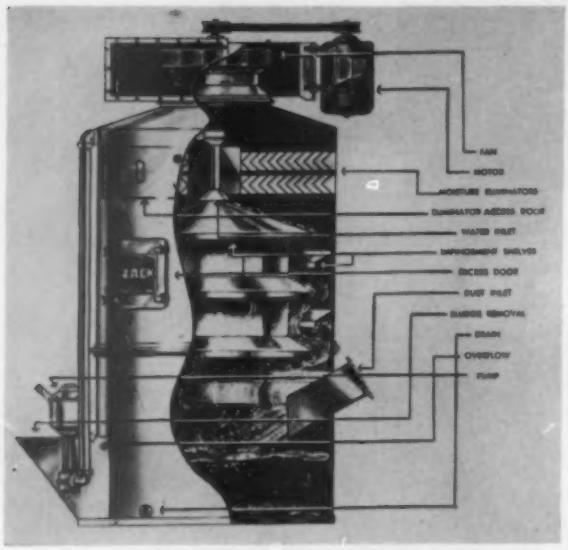
A group of Americans from every walk of life has joined together in a non-profit organization to combat home and community deterioration, A.C.T.I.O.N., the American Council To Improve Our Neighborhoods.

**Send today for a free copy of "ACTION."** It explains what A.C.T.I.O.N. is and proposes to do. It lists booklets, research, check-lists, and other material which can help you. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

**ACTION**

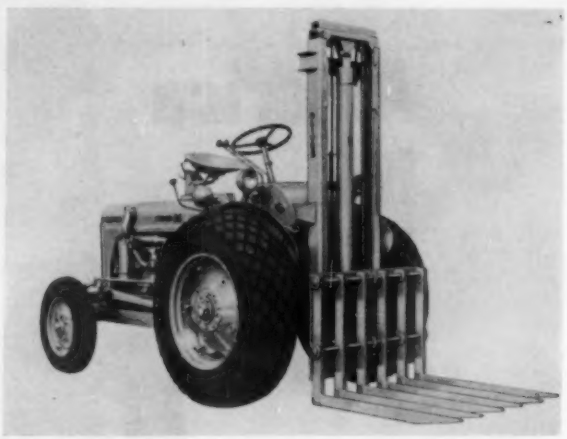
**American Council To Improve Our Neighborhoods**

# CM New Machinery and Supplies



● Floor type and cone type dust-fume collectors designed by the Zack Company consist of a cylindrical drum and internal wash-producing structures. Water, supplied by a direct driven pump, cascades downward within the collector. A series of closely related water curtains filter the dust and fume laden air in its upward travel. A double row of moisture eliminators, fabricated in convenient handling size, are mounted above the washing chamber. Access doors are provided in the housing for the inspection of eliminators and wash chamber. (101)

● A break-resistant blade made especially for wet cutting on all hard to soft materials has been developed by the Clipper Manufacturing Company. The new CBR-500 Series is completely reinforced throughout with strong Fiberglas webbing, while the center of the blade, where the strain is greatest, has extra reinforcing. (103)



● With a lifting capacity of 4,000 lb., Oliver Corporation's Super 55 fork lifts are offered with 8-ft. and 10-ft. tilting masts to accommodate different attachments. Six forward speeds, in addition to high, low, and reverse speeds, provide a range of from 1½- to 14½-m.p.h. The unit is extremely maneuverable, with a turning radius of only 10. ft. (102)

**JUNE, 1956**

## MORE INFORMATION PLEASE

**THE CONCRETE MANUFACTURER**
**431 S. DEARBORN ST.**
**CHICAGO 5, ILLINOIS**

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116 117

Name_____ Title_____

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a CONCRETE basis from foundations to sidewalks

PENN-DIXIE CEMENT Corporation

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FOR GREATER PROFITS — BUILD APPROVED CONCRETE SEPTIC TANKS with

NORWALK EQUIPMENT

Build rectangular concrete septic tanks that will meet the most rigid specifications of local health officers and sanitary engineers. Build them QUICKER and at LOWER COST with NORWALK septic tank molds.

Molds built to your requirements

Write for details

THE NORWALK VAULT COMPANY
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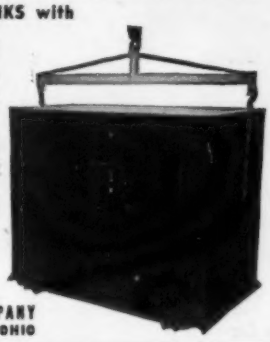
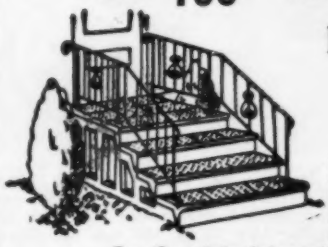


NOW MORE THAN 150 LICENSED MANUFACTURERS Producing Patented homeward® Concrete STEPS



A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write
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® homeward is a Registered TRADE MARK.

Richmond

TRIM TYPE
STEEL DOOR FRAMES
FOR RESIDENTIAL AND LIGHT CONSTRUCTION

GIVE YOUR CUSTOMER THESE ADVANTAGES

- FASTER INSTALLATION
- LOW COST
- SUPERIOR CONSTRUCTION

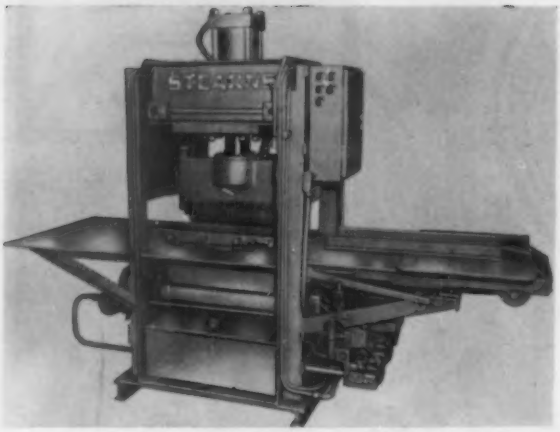
FOR BLOCK PRODUCERS THIS MEANS

- EASY EXTRA SALES
- EXTRA PROFIT

ONLY A SMALL INITIAL INVENTORY REQUIRED

WRITE TODAY FOR FREE COMPLETE INFORMATION

RICHMOND FIREPROOF DOOR COMPANY
NORTHWEST "F" STREET, RICHMOND, INDIANA



● Featuring a new principle of "floating action" knives, Stearns' new block cutter produces true cut blocks of uniform size. Each step of the splitting cycle is automatically initiated. The rate of production is automatically controlled with a range of from 6 to 12 complete splitting cycles per minute for straight line cuts. It will accommodate block up to 8-in. in height and 24-in. in length. ← (104)

● Designed as a piece of office furniture, General Electric Company's new "Desk Mate" base cabinet station is about the same height as the average desk. Operating controls are conveniently located near the top, and both side panels are removable for accessability. The new cabinet will house standard 19-in. chassis operating in any mobile radio frequency range. ↑ (105)


# How Willard makes concrete placing *easier... faster!*

**5½ C.Y. WILLARD** with fluid drive

**HELPER FINS** at mouth of drum discharge smoothly without surge.

**SINGLE LEVER CONTROL** operates throttle and drum brake.

**DRUM BRAKE** prevents roll back and concrete re-surge.

**CLUTCH ACTS AUTOMATICALLY** when shifting gears to mix or discharge.

**EXTRA LONG CHUTE** is 17 feet with extensions.

**HYDRAULIC LIFT ARM** raises or lowers end of chute for accurate placing.

See your local Willard dealer or write for descriptive bulletin.

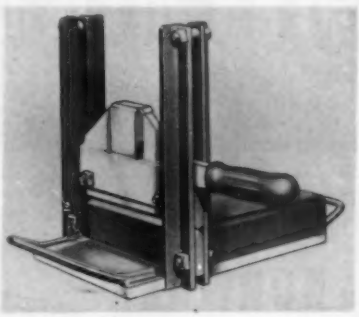
Member: T.M.M.B.

*Manufactured in Los Angeles, California and Galion, Ohio*

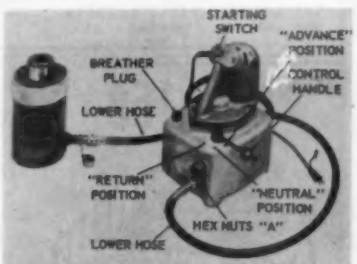
**WILLARD CONCRETE MACHINERY SALES COMPANY**

11700 WRIGHT ROAD, LYNWOOD
(LOS ANGELES COUNTY), CALIFORNIA

**WILLARD TRUCK MIXERS**

● Used for trimming the ends of masonry units, Besser Company's Pony Jr. trimmer is a handy companion to the Besser Pony Block Trimmer. Cutting is done by striking the upper cutting blade holder with a heavy hammer. The Pony Jr. cuts square or at any angle. The illustration above shows the Pony Jr. cutting blade in down position. ↑ (106)



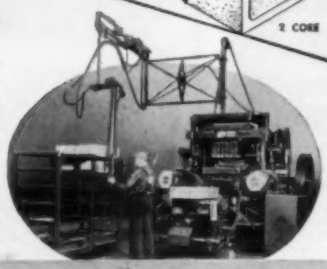

● The new No. 798 CO electric pump, manufactured by Templeton, Kenly & Company, provides combination units with capacities from 10 to 100 tons for lifting, pushing, or pulling heavy loads when used with Simplex "Re-Mo-Trol" single or two-way rams. The pump has a built-in ½ hp. ac/dc universal motor and a two-speed automatic changeover. ↑ (107)

# Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent? Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.

## ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

**BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.**

A 8585-½-H

---

**Edmont Case No. 475:** Handling finished concrete products, plastic treated gloves lasted for 2 shifts. Edmont No. 31's with **triple-thick** palm coating, wore up to 8 shifts, cut costs more than 50%.

## Job-fitted gloves cut costs over 50%

No. 31 triple-coated palm

The actual wear report given above is typical of the experience thousands of users have had with Edmont "job-fitted" gloves. In this case, Edmont No. 31's were recommended for the job because their triple-thick plastic coated palms outwear any other gloves made for handling rough concrete and cinder blocks. These gloves also give a better grip to prevent accidents and breakage.

**Free Test Offer To Listed Firms:** Tell us your operation and materials handled. Without cost, we will send you recommended gloves for on-the-job testing.

**Edmont Manufacturing Company**
1208 Walnut Street, Coshocton, Ohio

**Edmont JOB-FITTED GLOVES**

---

# The $H_2O$ Meter

**MEANS CONTROLLED SLUMP PLUS CONTROLLED YIELD**

1. **Instantaneous Moisture Readings IN READY MIX** Show your customers that you mean business when you talk "controlled concrete" because your batcher can now determine moisture content as easily as reading the clock.
2. **Instantaneous Moisture Readings IN BLOCK PLANTS** Permit immediate adjustment of batch weights, when moisture content changes, so that a uniform number of blocks will be produced from each batch.
3. **The Use of an $H_2O$ Meter** makes it possible to engineer the mix to a fine point with confidence that design strength can be met without resorting to large margins of safety.

The $H_2O$ Meter has been completely proven in the field to be accurate and trouble free, and we fully guarantee it to be so.

Base prices for single calibrations are:

**$600** Installed by us— **$475** Installed by the purchaser F.O.B Sarasota, Fla.

***For Complete Information Contact Us***

**SARASOTA ENGINEERING CO., Inc.**

OFFICE AND FACTORY: 2010 PINE TERRACE
P.O. BOX 1329, SARASOTA, FLORIDA

DISTRIBUTORS FOR $H_2O$ METER
Peabory Sales, Inc., Tampa, Florida
Tool Box, Inc., Greensboro, N. C.
Concrete Controls Corp., Wheaton, Illinois

NATIONAL READY MIXED CONCRETE ASSOCIATION

SAVE MONEY
when pouring concrete
RENT ECONOMY
STEEL FORMS

Easily and quickly assembled

Complete supervisory service

Adaptable to wide use

Save time and material

Other forms available on a purchase basis

Write for catalog to
**ECONOMY FORMS CORP.**
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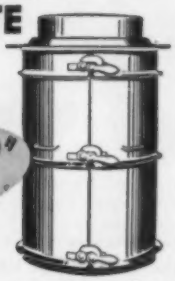
DISTRICT SALES OFFICES: St. Louis, Mo. • Kansas City, Mo. • Lincoln, Neb. • Minneapolis, Minn. • Ft. Wayne, Ind. • Milwaukee, Wisc. • Cincinnati, Ohio • Cleveland, Ohio • Metuchen, N. J. • Rochester, N. Y. • Springfield, Mass. • Washington, D. C. • Decatur, Ga. • Dallas, Texas • Los Angeles, Calif. • Oakland, Calif. • Denver, Colo.

CALL ON Quinn
For QUALITY
CONCRETE PIPE FORMS



"STANDARD" The World Over

Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

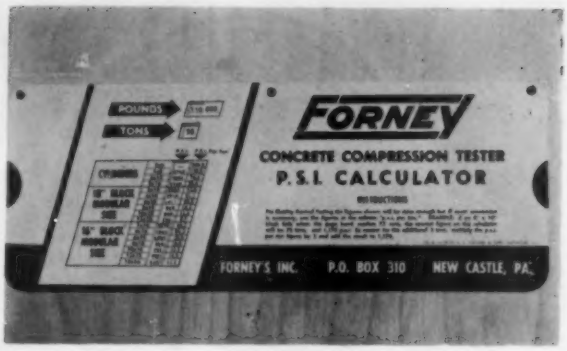
*Also Manufacturers of*
QUINN CONCRETE PIPE MACHINES

**Free CATALOG**

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA

● This new pocket-size slide rule calculator is offered free of charge by Forney's, Inc., to requests giving company name and individual's title. Designed to convert instantly the pressure applied to concrete cylinders and blocks into p.s.i., its range is from 0 to 175 tons covering cylinders from 3- by 6-in. to 8- by 16-in., and 13 standard modular size blocks. Engineers, contractors, and manufacturers of concrete products will find it a most useful instrument. ▲ (108)



● Longer life and high-speed cutting are features of the new line of Carbide Bonded Diamond blades designed by the Consolidated Diamond Tool Corporation for wet cutting of abrasive block. The new blade has proven economical to manufacturers for use in block salvaging at the plant, and to masons and "on-the-job" contractors when block is used for finished wall construction. ▲ (109)

● Model V Mole concrete drilling machine, featuring a hydraulic feeding mechanism and swivel head, drills holes through reinforced concrete, brick, and tile at high speeds at any angle. Diamond-faced core bits from 1 to 14 in. in diameter are fed automatically into the work surface by the hydraulic feed system. The machine can be equipped with either electric or gasoline power. ▲ (110)

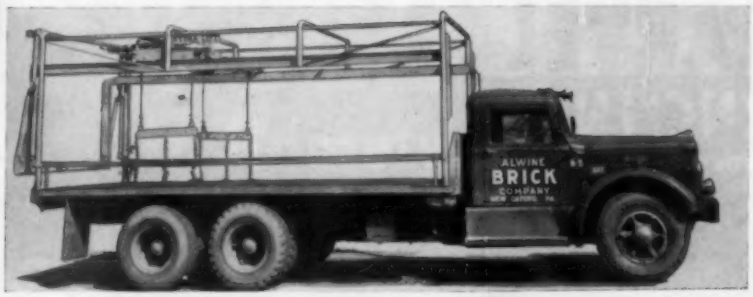
● Features included as standard equipment on this outdoor fork lift, manufactured by the Ottawa Steel Division of L. A. Young Spring & Wire Corporation, are shuttle gear transmission with control lever on steering column, providing 6 forward and 6 reverse speeds; power steering; lights; and ignition-key starting. The unit is available with pallet forks or concrete block tine forks. Large pneumatic tires on the front drive axle, extra ground clearance, and shortened wheel base contribute to its maneuverability. The Tracto-Lift comes in three basic models: TL-50 (5,000-lb. capacity); TL-60 (6,000-lb. capacity); TL-70 (7,000-lb. capacity). ▲ (111)

## INCREASE PROFITS ON YOUR DELIVERIES

with the

# Hydra-Lift Unloader

(Patents Pending)




**UNLOADS—**

CINDER BLOCKS
PALLETIZED MATERIALS
BRICKS, 4" BLOCKS
SOLID BLOCKS, TILE
CONCRETE BLOCKS

**SAVES—** LABOR.
MATERIALS.
TIME.
UPKEEP.

FINGER CONTROL of four separate hydraulic operations: overhead carriage movement, lifting mechanism, rear fold-down, drop-leg support jack.

MINIMUM HANDLING eliminates breaking and chipping.

ONE MAN unloads two cubes (or pallets) at a time. Unloading time for 12 foot bed—6 to 12 minutes.

NO separate, costly helper engine—all power is from truck engine through power take-off.

**FOR FULL DETAILS AND PRICES**
Write or phone:

**HAVERSTICK BROS.**
2111 Stone Mill Road — Lancaster, Pennsylvania
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**DEALER INQUIRIES INVITED**

Dur-O-waL preserves beauty, adds structural soundness and prevents cracking.

**Trussed Design**
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Phone, wire or write Dept. 2S today for complete dealer information . . . . you have a market for Dur-O-waL in your town. Act now.

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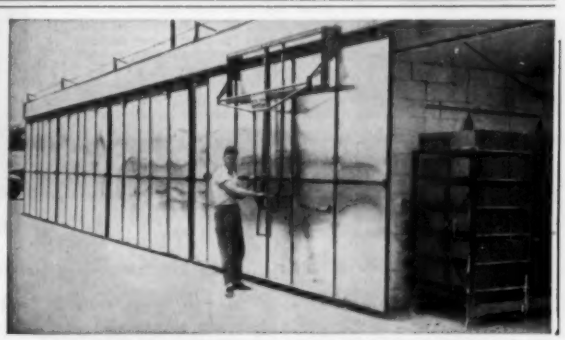
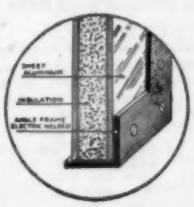


Moore Carrier-type Doors at Albany (Ga.) Concrete Prod. Co.

## Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time




Keep heat where it belongs—inside the kiln—with Moore Aluminum-Insulated Doors. They improve curing conditions—save steam—last longer.

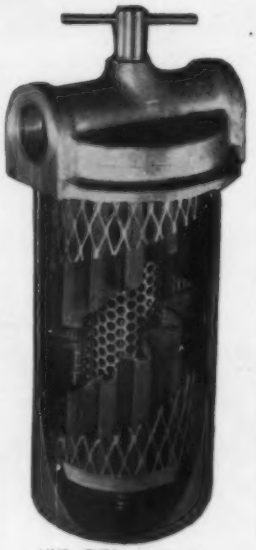
Send us dimensions of present door openings for quotation.

**MOORE DRY KILN COMPANY**
Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers
JACKSONVILLE, FLORIDA — BRAMPTON, ONT., CANADA — VANCOUVER, B. C., CANADA — NORTH PORTLAND, OREGON

# Simplify Preventive Maintenance on Hydraulic Equipment with MARVEL SYNCLINAL FILTERS

SUMP TYPE (cutaway)

Change excessive and costly "DOWN-TIME" to Profitable "OPERATING TIME"



LINE TYPE (cutaway)

Any workman can easily disassemble, thoroughly clean and reassemble MARVEL Synclinal FILTERS, on the spot, in a matter of minutes. RESULT:—The equivalent of a brand new filter, ready for longer periods of dependable service and protection.

MARVEL Synclinal FILTERS are "permanent type" filters because there are no throw-away parts to buy or replace, no moving parts to wear out or break down. Your FIRST COST is your ONLY COST.

Marvel's BALANCED Synclinal design offers 2½ times more ACTIVE filtering area with sufficient storage capacity for filtered-out damaging particles; thus, longer periods of productive operation are attained at a minimum filter maintenance "down-time."

You can further simplify your preventive maintenance program by standardizing with MARVEL Synclinal FILTERS, by specifying them on all new equipment and installing them on existing equipment.

**FOR EFFICIENT FILTRATION of Hydraulic Oils, Fire-resistant fluids, Coolants, Lubricants, Water— and FOR DEPENDABLE PROTECTION on all Hydraulic and other Low Pressure Circulating Systems— Investigate MARVEL SYNCLINAL FILTERS**

## OVER 650 Original Equipment Manufacturers install MARVEL SYNCLINAL FILTERS as Standard Equipment!

**A SIZE FOR EVERY NEED**

Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of monel mesh sizes range from coarse 30 to fine 200.

**Immediate Delivery**
As in the past, Marvel continues to offer IMMEDIATE DELIVERY!

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Catalogs containing complete data available on request

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:

- ☐ Catalog No. 107—For Hydraulic Oils, Coolants and Lubricants
- ☐ Catalog No. 301—For WATER
- ☐ Catalog No. 200—For Fire-resistant hydraulic fluids.

Name .....
Title .....
Company .....
Address .....
City .....
State .....

PO-6


## New Literature

**Action photos** of a new portable electric tub mixer for plaster and mortar are presented in a descriptive catalog just published by the *Master Vibrator Company*. The catalog shows how the mixer can be set up and ready to go in less than a minute wherever there is a 110-115 volt outlet. Comparison charts and specifications are included. **(112)**

**Lightweight concrete Information Sheet No. 3** has recently been published by the *Expanded Shale Clay and Slate Institute* as a companion piece to No. 1—both of which deal with the design of expanded shale lightweight concrete mixtures. These two bulletins are offered free of charge by the Institute. **(113)**

**Blok-Mesh masonry wall reinforcing,** its advantages and installations, are described in a brochure available from the Carter-Waters Corporation. Blok-Mesh is swedged to give tighter bond, more lasting reinforcement, and greater resistance to lateral pressure and shrinkage. **(114)**

**Columbia Machine Company** has published a comprehensive block manual which illustrates and gives the dimensions of hundreds of shapes, sizes, and types of masonry units which can be produced by the company's block machines. The manual also details various construction uses of Columbia Machine-produced masonry. The book is available free of charge to anyone in the concrete masonry industry. **(115)**

**Material for Industry,** a 12-page booklet describing Fiberglas and Kaylo products for maintenance and supply, is available from *Owens-Corning Fiberglass Corporation*. Photographs and sketches illustrate Kaylo high-temperature block and pipe insulations, Fiberglas industrial insulations, built-up roofing, and many other products. **(116)**

**Automatic stave machines,** mixers, loaders, and accessories are described in a folder released by the *OK Manufacturing Company, Inc.* The new OK silo stave machine, which can be used for plain, interlocking, and corrugated staves, is featured, along with illustrations and data on other types of equipment. **(117)**

# Speed Up Hand Work with the BIG BULLY Air Hammer

- Clean Equipment
- Scrape Dry Concrete
- Clean Forms

Weight only 50 oz. 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

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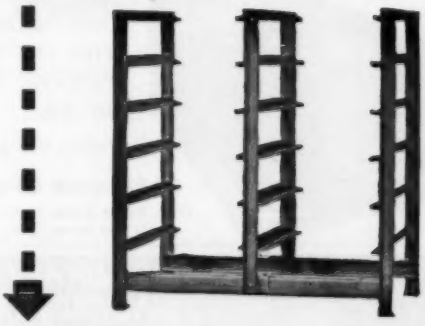
# CHASE BLOCK RACKS, PLAIN STEEL PALLETS

*Your best buy*



*Here's why* • • • Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

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# CUT ANY MASONRY MATERIAL FASTER with a ..... Clipper MASONRY SAW

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Priced for every budget — from $265.

## The Masonry Saw With All the Features!

Clipper made the world's first Masonry Saw nearly 20 years ago — Clipper makes the World's finest Masonry Saw today! Let Clipper's famous 5-Day FREE TRIAL prove it to you.

## A CLIPPER BLADE FOR EVERY JOB...

For lowest possible cutting cost, look for the bright orange centers which identify genuine Clipper Superior Blades. All Clipper Blades — Diamond, Abrasive and Reinforced — are manufactured under the most advanced Quality Controls known to the industry, your assurance of consistent quality and peak performance — rim to stub, blade to blade!

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Factory Branches in Principle Cities, Coast to Coast.

## VIBROLATOR S

# MOVE CEMENT WET OR DRY

**EFFECTIVE, QUIET, HARMLESS TO EQUIPMENT**

When you move sand or cement, wet or dry materials—check the plus features Vibrolators offer. Instantly self-starting without fail, all-directional vibration that forbids sticking but does not harm equipment. Only one moving part—a steel ball—that needs no maintenance or lubrication. So quiet and reliable you'll bolt it on and forget it!

Write for catalog. You will also receive form for describing your problem. No obligation!

**MARTIN ENGINEERING CO.**
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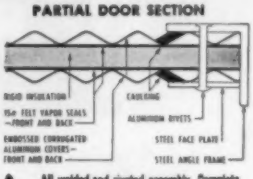
*Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.*

Kiln closure equipment is no place for tin-pan construction. Be sure the equipment *you* buy has the *guts* to give you efficient operation and long trouble-free service. Write, wire, or phone for detailed information.




All welded and riveted assembly. Complete internal drainage system for condensation.

# Universal

**KILN DOORS and DOOR CARRIERS**

NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*

**UNIVERSAL DOOR CARRIER, INC.**
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"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

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*SEND US A ROUGH SKETCH OF YOUR REQUIREMENTS*

*Builders of the Original "Bin-Batcher"*

**GWYNNE** *Concrete Plants*

BIN BATCHER

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**LEAD the LEAGUE in Concrete Profits!**

Build Quality Septic Tanks with CARPENTER Forms and Equipment. This *high-speed* method bats 1.000 for coast-to-coast customer satisfaction! Insures big production of premium units on a minimum cost basis. ONE MAN handles the CARPENTER Delivery Rig.

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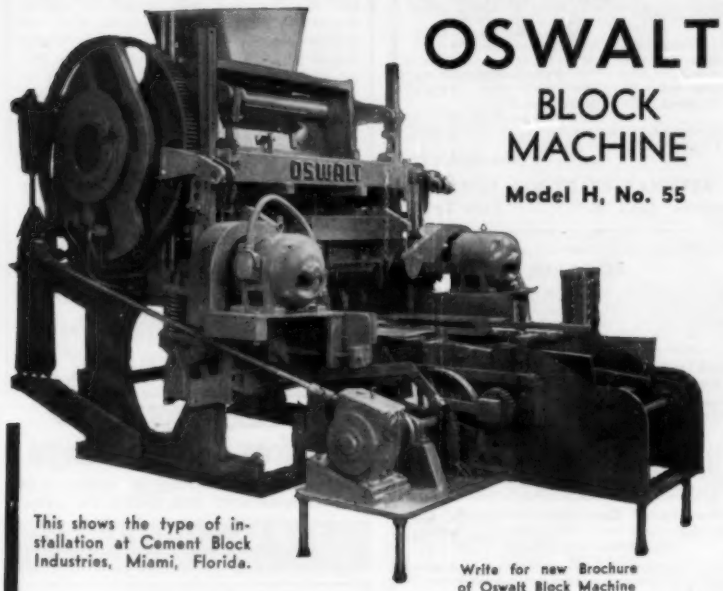


This shows the type of installation at Cement Block Industries, Miami, Florida.

## OSWALT BLOCK MACHINE

**Model H, No. 55**

It's the "talk of the trade" because the OSWALT Block Machine is setting new records for high output without sacrifice of quality.

Massively built with full 2" thick stress-relieved frame, relaxed operation, and steady powerful action, all insure long, economical service.

*ONLY OSWALT* offers these complete and exclusive features:

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600 BBL. bulk cement storage for ready-mix operation.
Complete. Bucket elevators, hopper, scale, etc.

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New vibrating table 24'0" long, with Allis Chalmers motor. Met. forms for T-shape joists. Distribution Concr. system. 16 ft. Coner. Mixer.

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- Established Business—15 years
- Complete Block Plant
- Besser Vibrapac with front end pallet feeder
- 2—No. 9 Stearns Machines
- Cement bin—capacity 600 B.B.L.
- Aggregate Bins
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*All above located on 17 acre tract including buildings and office and residence.*

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Besser Vibrapac with Bergen front pallet feeder
Reasonably Priced
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Being replaced by a GOCORP "Trustee" block machine
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**CONCRETE TRUCKS**
***Superior Condition***

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6 Single Axle '47 thru '55s.

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FMC 180. 4" & 8" Brick molds, Pallets & Carts. Many spare parts. Brand new. This machine is in perfect condition. Used less than a full year. Reason: Can't handle block business.

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1—10 x 16 Roll Crusher
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4", 6", 8", 12" and 2 types chimney block and brick attachments. New 8" and 12" cores never been used. Brick and 6" attachments used very little.

2,000 18x18 pallets

15 H.P. Scott Air Compressor

Reason for selling, purchased three (3) block machine.

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4700 miles separate these customers but the benefits each enjoys by using Con-Pipe parts are identical.

Con-Pipe replacement parts for concrete pipe and mixer machines are made in our own foundry from a special alloy specifically formulated for abrasion resistance—the longest lasting alloy known today.

Con-Pipe wings, long bottoms, mixer blades, etc., last several times as long as ordinary parts. Dollar savings on replacements are inconceivably high if you have not tried Con-Pipe parts. Production and labor losses are reduced to an absolute minimum.

Pipe and block makers—write for our new catalog today. Give us a trial. You'll be glad you did.

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LOWER COST
***packer-head wings***
**Proved to last as long or longer — yet cost considerably less. Write for prices.**

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| 1949 GMC AC854 | $3000 |
| 1949 Mack EQ2D | $3500 |
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**SO 6-2212**

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1 Kent 28 cu. ft. Mixer, new liners.
1 new and 1 re-wired motor for same.
This mixer completely overhauled and in excellent condition.

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Econocrete—when used in the manufacture of concrete block or other concrete units—reduces cement requirements by one-third.

Econocrete strengthens concrete mixtures, reduces shrinkage and expansion, improves fire resistance, seals settlement cracks, and aids in moisture-proofing of tile, cement, stucco, etc.

*This product is patented.*

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**BLOCK MACHINES**

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| 1—18 ft. Stearns Skip Hoist | 450.00 |
| 1—George 28 cu. ft. Concrete Mixer | 750.00 |
| 1—Continuous Mixer | 150.00 |
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Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

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Phone: Tilden 5-5400

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**ALBERT J. SMALDONE**

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Also bargain on 2 cu. yd. Mixer and 500 and 750 gal. Septic Tank Forms.

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Lith-I-Block L-3 two block automatic with off bearer, 4, 6, 8, 10, 12 & chimney molds.

Go-Corp Prince two block plain pallet automatic with off-bearer; 4, 8, & 12" molds.

Multico Model 2 two block automatic with off-bearer, 4", 6", 8" & 12" molds.

Van-U-Matic two block plain pallet semi-automatic with off-bearer, 4, 6, 8, — 12" molds, 15hp air compressor, 1,050 3/16x18x18 pallets. We have several small mixers and belt conveyors.

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1—Two block Automatic Columbia Machine
1—Gravity Roll-a-way
1—Hydraulic offbearer
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1,100—8/16" by 18" by 20" steel pallets

*Terms can be arranged*

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FARMINGDALE, NEW JERSEY

*Specialists in Concrete Products Equipment*

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Guaranteed Quality

Flat • Square • Accurate

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Two—two-compartment aggregate bins.

Total capacity 80 tons.

One 200 bbl cement bin and cement elevator—Syntron vibrator on bin.

Weight batcher with separate aggregate and cement compartment.

Gates, legs, etc.

This equipment new in 1954, used on one job, in excellent condition.

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Concrete Products Manufacturing Business and Building Supply Distributorship. Established 6 years in heart of progressive Eastern Pennsylvania region. Plant located along busy U. S. Highway Route. Buildings and machinery in excellent physical condition. Annual gross $100,000.00. Population of over 750,000 within a radius of 25 miles of plant. Back log of orders for products. For sale in entirety.

Land, Buildings and equipment $40,000.00. Inventory of materials and finished products at replacement cost.

**Myerstown Brikcrete Co.**

MYERSTOWN, PA.

## BESSERS FOR SALE

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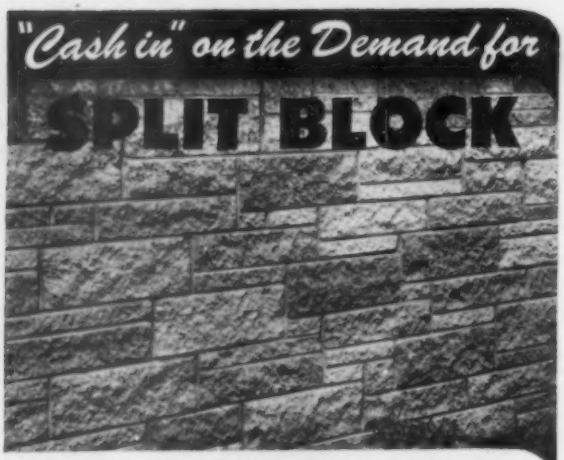
**THE GENE OLSEN CORPORATION**

ADRIAN, MICHIGAN

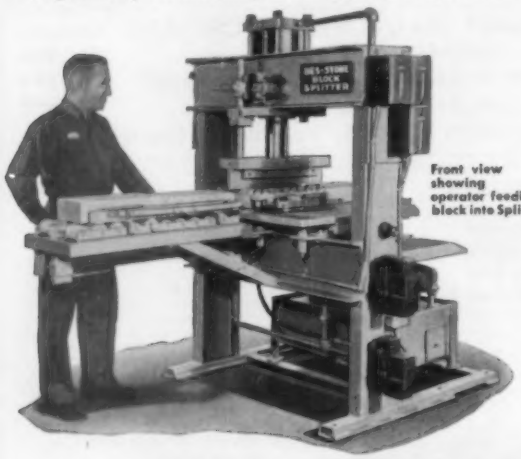
"Cash in" on the Demand for

SPLIT BLOCK



## Install a BES-STONE Splitter

You can greatly increase block sales and add to profits by using a Bes-Stone Block Splitter. Architects and builders are sold on Bes-Stone Split Block because of its beautiful quarried stone appearance and wide range of adaptability. With its powerful, hydraulic operation, the Bes-Stone Splitter handles up to 900 units per hour. All straight line cuts. No cull block. Quickly adjustable for various heights. Finished Split Block is automatically removed from under the splitting knife by the incoming block. Quiet, safe operation.




Front view showing operator feeding block into Splitter.

. . . and this

**PONY TRIMMER**

*Comes in Handy for*

**Trimming Block on the Job**

Trims off the ends of split block up to 8" in width. Pressure is supplied by a hand-operated hydraulic pump having a capacity of 12 tons. Compact, lightweight, and easily portable from job to job.

*Ask your Besser representative for literature, or write:*

**BESSER COMPANY**

*Complete Equipment for Concrete Block Plants*

ALPENA, MICHIGAN, U.S.A.

A 8500-½


## *Concrete Manufacturer*

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***Unloads***

- **Off Sides and Rear**
- **Into Basements**
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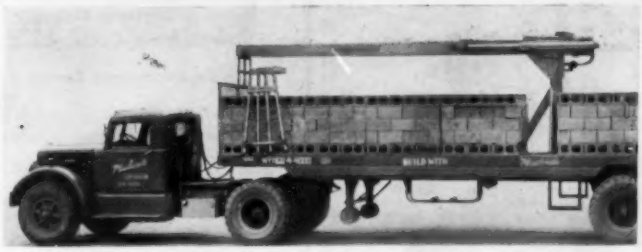

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***Reduce cutting costs 50%***

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**5/16" to 9/16" Head Capacity**
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- **smooth — fast-filling, quick-cleaning**
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- **cement: 10x6, 12x7, 14x8, 16x8"**
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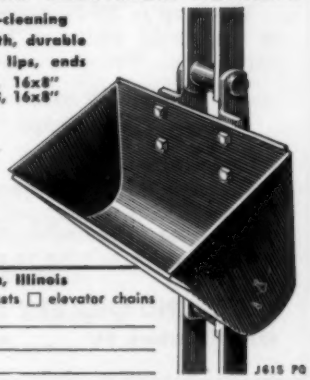

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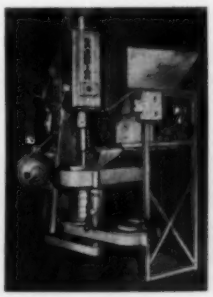

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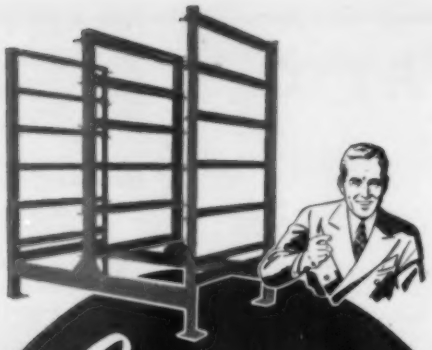

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Now . . . Columbia Heavy Duty Standard racks can be shipped to your plant within a few days after your order is received. Columbia can also custom design racks from your blueprints or measurements to fit your special plant requirements.

Racks are ruggedly constructed of high quality steel for all pallet and block sizes...and can be shipped sub-assembled for compact delivery and easier handling.

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**PORTLAND CEMENT**

**PLANT MAP**

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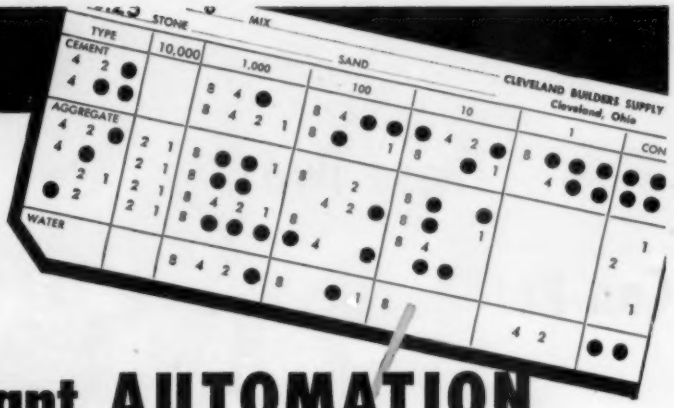


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Incidently, since 1955 all Federal specifications for any concrete construction involving over 5,000 yards require automatic, interlocked and recorded batching. That's on ALL future Federal work! So it's high time to think of BUTLER automation.

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(Above) BUTLER control panel for stationary mixer.

(Right) Another automatic BUTLER control panel.

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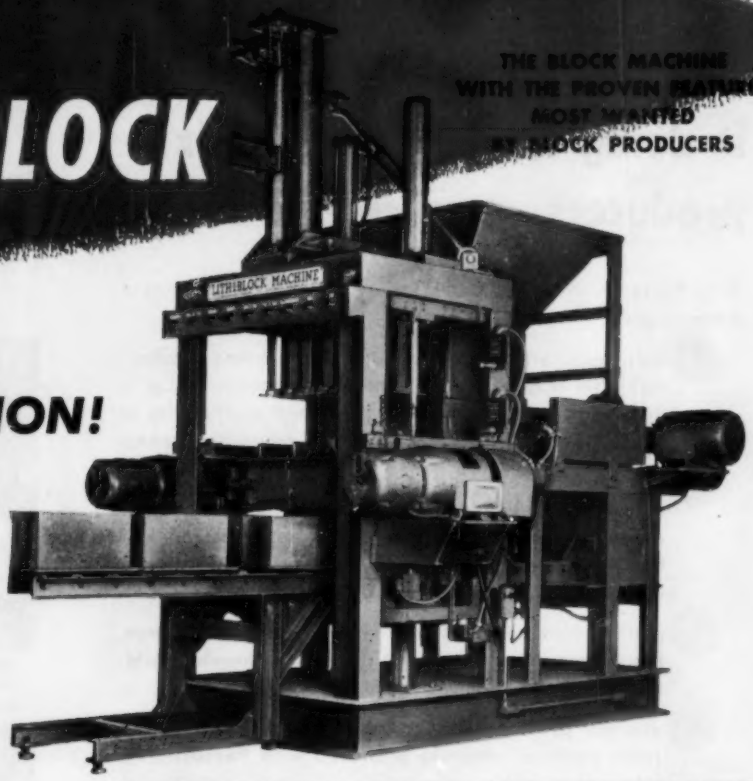
THE BLOCK MACHINE WITH THE PROVEN FEATURES MOST WANTED BY BLOCK PRODUCERS




more **SPEED!**

more **POWER!**

more **PRODUCTION!**

## NOW

**HYDRAULIC or AIR POWERED!**

**BONUS QUALITY**

**LITH-I-BLOCK**

**MADE ONLY ON THE LITH-I-BLOCK MACHINE**

**ROTA-POSED® AGITATION**

No Agitator Grids Needed — Rearrange pins to any combination of blocks — Fills mold in a fraction of the time formerly required.

**MICRO-JUSTABLE® VIBRATION**

Calibrated adjustable weights allow accurate pinpoint selection of any intensity desired from zero to maximum.

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Produces 12.5% more power than used with other block machines.

**GUIDED PALLET SUPPORT AND STRIPPER**

Extra heavy shafts guide pallet support and stripper freely but rigidly in their vertical travel — assuring perfect alignment.

**UP TO 1000 BLOCKS PER HOUR**

10 Seconds per cycle — 6 cycles per minute. (Hydraulic 3-block machine — from actual block plant tests)

**4-POINT HEIGHT CONTROL**

Built in — at no extra cost — the most positive height control on the market.

**QUICK-CHANGE MOLD BOX**

The entire machine can be changed from one size block to another in a matter of minutes.

SALES AND SERVICE THE WORLD OVER

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HOLLAND • MICHIGAN

ONE PIECE OF EQUIPMENT OR A COMPLETE PLANT LAYOUT

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Send me latest bulletins on Lith-I-Block Machine.

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COMPANY_____

ADDRESS_____

CITY & STATE_____

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# here's what POZZOLITH is doing for 700 ready-mix producers...and can do for you...

With Pozzolith in your concrete mix designs you gain these advantages:

- economies with Pozzolith are immediate and substantial. With a given set of materials, Pozzolith will produce concrete of a given strength and workability *at a far lower cost than is possible by any other means.*
- you produce better quality concrete—concrete that has more placeability, is easier to finish and has less tendency to segregate. These are some of the benefits of Pozzolith concrete that reduce complaints and make for *customer* satisfaction.
- you produce concrete that has minimum shrinkage, low permeability and great durability, thereby building *owner* good will.
- you get *proven performance*—more than 115 million cubic yards of concrete produced with Pozzolith for all types of jobs.
- Pozzolith adaptations permit rigid control of entrained air and adjustments in rate of hardening to precisely meet varied job requirements.
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- adding Pozzolith is easy and accurate with the push-button dispenser.
- more than 75 full-time Master Builders field technical men provide valuable product-use know-how. One of these men on your team will assure maximum benefits to you and your customers.

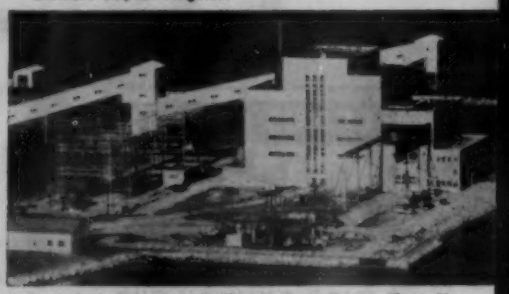
It's for these reasons that over 700 ready-mix producers are employing Pozzolith in "strength concrete" and commercial concrete.

If you are not already using Pozzolith, it will pay to contact your local Master Builders' man for information on getting started.

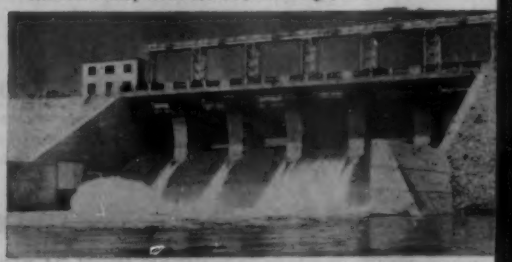
Representative jobs in which **POZZOLITH Ready-Mixed** concrete was used

Parking Authority Garage, Philadelphia, Penna. Pozzolith Ready-Mixed Concrete supplied by Warner Co., Philadelphia.

Permanente Foundation Hospital, Los Angeles, California. Pozzolith Ready-Mixed Concrete supplied by Graham Brothers Co., Los Angeles.



Central Hudson Gas & Electric Corp. Power Plant, Newburgh, N. Y. Pozzolith Ready-Mixed Concrete supplied by Hudson Valley Concrete Co., Newburgh, N. Y.



Fanshawe Dam, London, Ontario. Pozzolith Ready-Mixed Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

The MASTER BUILDERS Co

Division of American-Marietta Company

Big American 700 Key To Profitable Operation . . .

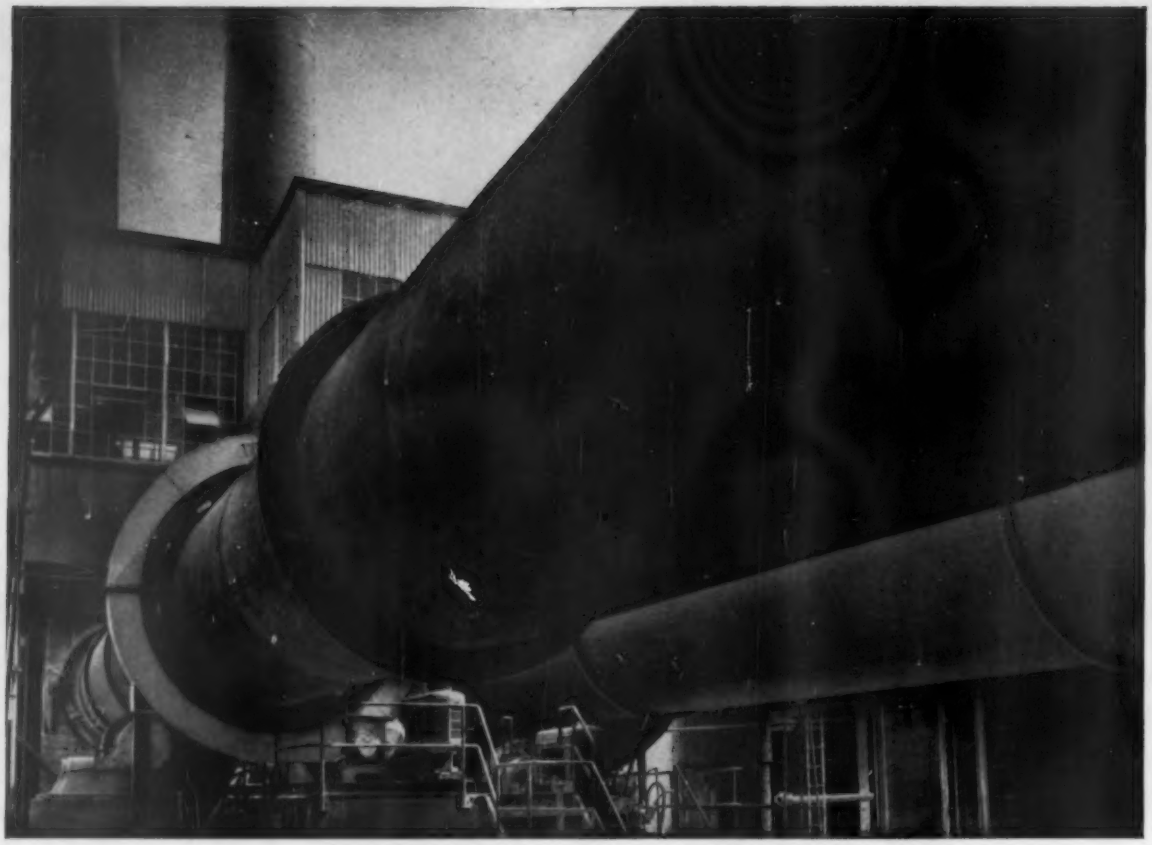
# PROVES DURABILITY IN ROCK QUARRY!

Here's where real machine durability stands out! A few months in the rock quarry separates claims from facts—proves that American 700 Series Cranes stand up longer—do more work! Big, rugged crawler pads and tough travel mechanism hold up despite the pounding they get when moving through jagged rocks. From top to bottom, the American 700 is built to take the beating that rock work gives! The 700 Series is big—tough, but not muscle-bound! Sensitive air controls operating short arc tandem band clutches spot the dipper exactly—swing it up and out fast, accurately. Easy control that boosts quarry output!

If you're quarrying rock, sand, gravel or other material in smaller quantities, you can get big crane performance and versatility from American 100, 200 or 300 Series Shovels—models that offer dipper capacities from ½-yard up! Talk over your quarry operation with your American Distributor—he'll help you choose the right American Shovel for your needs and he'll show you American features that cut maintenance and operating costs—give you bigger profits day in and day out!

## AMERICAN HOIST
and DERRICK COMPANY

St. Paul 1, Minnesota



## A TRAYLOR ROTARY KILN

# Almost 10½ miles long

That's what it would take to equal the combined length of all the rotary kilns Traylor has built in the last 14 years. Built on the average of over 1 a month, more than 175 Traylor Rotary Kilns are currently engaged in the calcining, roasting and chloridizing, volatilizing, sintering and nodulizing of over 20 different products. Many of these are operating in the limestone and cement producing industries.

With this wealth of experience, Traylor has become thoroughly familiar with the thermo-processing requirements of modern limestone and cement production. Traylor has developed many advance rotary kiln design features that contribute to the low cost, trouble free calcining of lime and cement.

Every Traylor Rotary Kiln is individually "Traylor-Made" for its specific job. Sizes have been built from the smallest up to 12′ in diameter and 450′ in length.

Bulletin #1115 will give you all the facts and information on the profit-producing advantages of Traylor Rotary Kilns. Write for your free copy today.

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Traylor **ROTARY KILNS**

A FULLY AIR-CONTROLLED 1¼-YD. MACHINE

# THE NEW LORAIN-56

1¼-YD. SHOVEL

25-TON CRANE
*(as fully convertible machine)*

30-TON CRANE
*(as heavy-duty lifting Crane on extra-wide crawlers)*

## ALL OF THESE FEATURES AND MANY MORE ARE STANDARD

### 2 LEVER "METERED" AIR OPERATION

Easier! Faster! Simpler! Uses only 2 levers to apply "Air-Ease" power to all turntable operations. A new concept in fingertip control. Retains full "feel" of machine.

### "SHEAR BALL" MOUNTING

No centerpin or nut, no rollers to wear. No adjustments! Provides smooth, rock-steady, "ball bearing" swing. Nothing else like it on any other make of shovel-crane.



### SQUARE-TUBULAR-CHORD CRANE BOOM

Lighter! Longer! Stronger! New, patent-applied-for design gives greater strength, less weight. Permits increased lifting capacities and working with longer booms.

### TORQUE CONVERTER

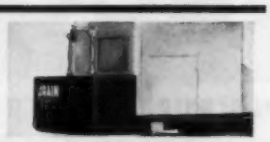
Gives the smoothest, most productive power take-off that can be had. Multiplies engine torque. Effectively absorbs digging shocks and strains. No-stall, "never-say-die" power hangs on—maximum work obtained from the diesel engine.

### ANTI-FRICTION BEARINGS

Now, anti-friction bearings on hoist and swing drums and travel shaft provide the ultimate in performance . . . smoother, more efficient.

### AIR CONTROL OF CRAWLER

Now — air does the work, controls travel, steering, tread lock, swing-travel jaw clutches. Far greater ease of operation. Adds greatly to production.



### REMOVABLE COUNTERWEIGHT

New design makes it possible to detach counterweight easily for lower weight when transporting this new Lorain over the highway. Can be removed or installed in minutes.

Here's the newest 1¼-yd. shovel-crane, the Lorain-56 —and it has *all* the newest, most advanced features combined into one machine. 2-lever, metered air controls... "Shear Ball" mounting...torque converter... and many, many other *standard* features are included. Operators will like its simple, easy operation and freedom from adjustments. Owners will find the resulting higher production profitable. A few of these outstanding features are briefly described at the left. Get the *full* Lorain-56 story from your Thew-Lorain Distributor now!

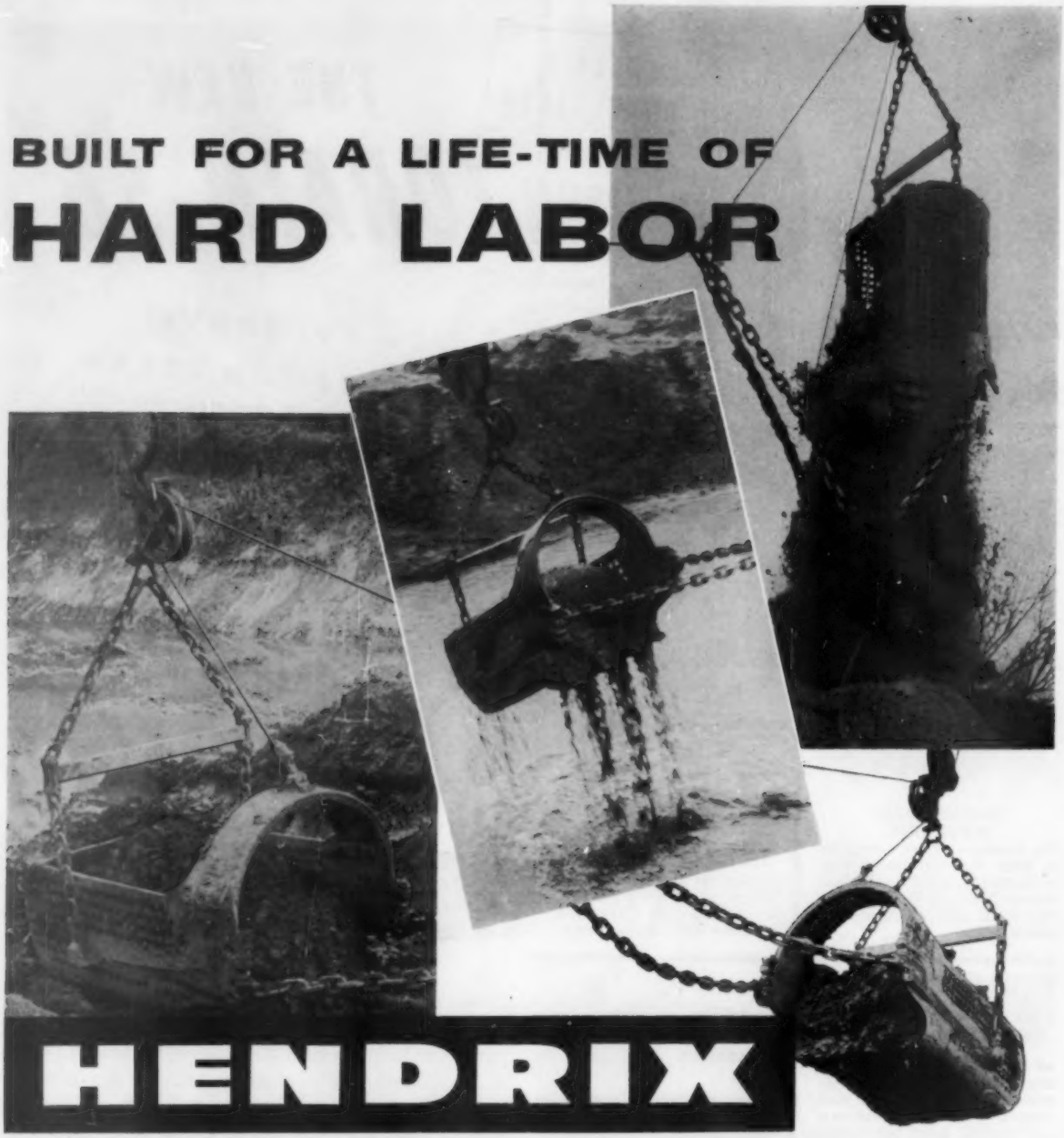
**THE THEW SHOVEL CO., LORAIN, OHIO**

THE THEW LORAIN.

***ASK YOUR THEW-LORAIN DISTRIBUTOR FOR FULL DETAILS ON THIS NEW MACHINE***

BUILT FOR A LIFE-TIME OF

# HARD LABOR



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# DRAGLINE BUCKETS

**A TYPE FOR EVERY DIGGING PURPOSE**

**¼ to 40 Cubic Yards**

*All Hendrix Buckets available without perforations*

**HENDRIX MANUFACTURING CO., Inc.**

**MANSFIELD, LOUISIANA**

Hendrix Lightweight Dragline Buckets

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## again the answer was.....

# Firestone NYLON TIRES

In excavating the marine channel on Galop Island in the St. Lawrence Seaway, millions of yards of heavy boulder-strewn glacial till are being moved under the toughest haul road conditions.

The Galop Island project is well on its way and as on other Seaway jobs, Firestone nylon tires is the answer because they are tougher tires. They cut big downtime losses, give more retreads and keep tire costs at a minimum.

Firestone nylon tires are built for severe service. The treads give maximum traction and they are extra tough to resist cutting. Double-thick sidewalls give added protection against cuts and snags.

Firestone's Safety-Tensioned *Gum-Dipped* nylon cord body gives greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Let your Firestone Dealer or Store show you how Firestone nylon tires will cut downtime and increase the profits on your job.

**A TIRE FOR EVERY ROAD, LOAD AND CONDITION OF SERVICE**

GROUND GRIP GG WIDE BASE ROCK GRIP RG WIDE BASE ALL NON-SKID ALL TRACTION RIB EXCAVATOR

**WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES, SPECIFY FIRESTONE**

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# *Champions in their field ...*

MARION 93-M • 2½ Yard Shovel • 80 Ton Crane

From the starting gun to the finish line—
from the windup until the javelin falls—
champions are a symphony of strength,
balance and endurance. The same qualities
make the Marion 93-M a stand out among
2½ yard machines—a true champion in its
field. Let the 93-M give you range, power,
strength, speed and dependable long life
of true championship calibre.

**Marion Means Business**

**MARION POWER SHOVEL COMPANY, MARION, OHIO**

# PROLONGED CONFINEMENT COUNTS

## ...keeping explosives at work behind the burden

A 100 ft. limestone quarry face. A 22 ft. burden. A 7-hole "alternate pattern" ROCKMASTER shot. At ⅓ second note how confined explosives force is stressing and shattering rock. Only leaks visible: a few small puffs of gas. Here's real efficiency!

Bottom initiation confines blast. At 1 second, explosives still are hard at work behind burden . . . pushing it out from face. No wild flying rock. No spouting geysers of escaping gas.

Prolonged-confinement pays off! No loud air snap. Vibration held to a minimum. Good, controlled throw. Here's a well-displaced 25,000-ton muck pile ready to be worked.

## PROLONGED CONFINEMENT—the Rockmaster® way

Here's an outstanding example of blasting efficiency. The explosives are hard at work shattering rock . . . not air. The blast pays off by giving maximum shovel production on the muck pile . . . in economies all along the line.

Secret of this good shooting at Limestone Products Corp. of America, Limecrest, N. J., is *prolonged confinement*. The blast, initiated at the bottom of the holes with ROCKMASTER millisecond delay electric blasting caps, is confined behind the burden. It's this right combination of ROCKMASTER blasting caps and Atlas explosives that gives—

- **good control**
- **improved breakage**
- **greater efficiency**
- **better public relations**

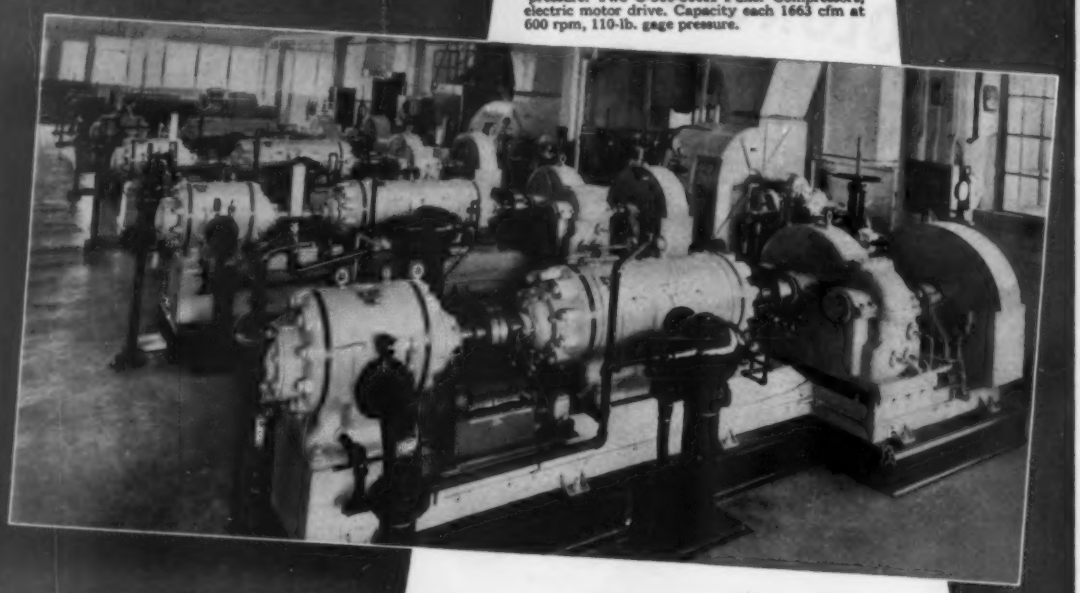
To get the most out of your blasting methods and your explosives, discuss prolonged confinement with your Atlas representative. You can benefit by his ideas and experience. And get "Better Blasting"—Atlas' informative newsletter on latest methods and materials. Write us to put your name on our mailing list today.

EXPLOSIVES DEPARTMENT

**ATLAS POWDER COMPANY**

WILMINGTON 99, DELAWARE

*offices in principal cities*



Four C-300-300H Fuller Compressors, steam turbine drive. Capacity each 1248 to 1805 cfm with a corresponding speed range of 450 to 650 rpm; one 125 and three 110-lb. gage pressure. Two C-300-300H Fuller Compressors, electric motor drive. Capacity each 1663 cfm at 600 rpm, 110-lb. gage pressure.

# PUTTING THE AIR IN AIRCRAFT

Aircraft companies use a lot of compressed air in the manufacture of airframes, engines, systems and components. The battery of six Fuller compressors pictured above meets one important aircraft facility's entire diversity of compressed air needs, efficiently and economically.

The key to Fuller's smoother operation is *rotary motion*, which provides large capacity in relation to size, simple direct drive from motor or internal combustion engine, minimum number of working parts, one-way air flow free from pulsation, lack of vibration, continuous service with minimum supervision and maintenance. Operation in cramped quarters or on ordinary flooring is simple and practicable.

**Fuller Rotary Compressors are built for capacities to 3300 c.f.m., 125-lb. pressure. Write for Bulletin C-5A, illustrating and describing these machines.**

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. . . pioneers in harnessing AIR

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Why not work in the congenial atmosphere of a moderately sized, multi-plant industry where your engineering ability will have considerable diversification rather than get buried in one of the giants of industry?
This old-line, well-established, progressive company has immediate need for mining and mechanical engineers.

**General Requirements Are:**

Degree (or equivalent in experience) from recognized college or university,
Two to five years' experience in your field. (Quarrying and/or Rock products preferred),
Age to 35,
Ability to get along with people,
Some travel associated (we have five plants in the North Eastern part of the country).
Your base of operations is near Chicago.
Our compensation and extra benefits are abreast of current National surveys.

*Send complete resumé of formal education and experience background.*

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Lucrative opportunity exists for live-wire salesman, presently calling on sand-and-gravel plants, to handle a nationally-advertised line of wet cyclones and rubber-lined pumps. Straight commission. Address:

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## WANTED

Assistant to Superintendent of stone quarry and crushing plant. Must have some executive experience with operation, capacity to handle men, ambition and willingness to improve self. Position offered has potential of permanence and high compensation.

***Write to:***

**OLD COLONY CRUSHED STONE CO.**
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Superintendent for large sand and gravel production operation located in Mid-Atlantic States. Must have thorough knowledge all phases of production. Basic engineering and geology desirable. Age preferably between 30 and 40. Good opportunity to advance in growing organization. Reply to

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## WANTED

**Gypsum Production Engineers**
**Cement Production Engineers**

Experienced men over 35 years of age with recent knowledge of production methods, process and machines in U.S.A. to act as Engineering Assistants and Design Consultants to plant design staff of large, well-known firm of Consulting Engineers in Midwest on new American projects. Must have working knowledge of large plant process and equipment, including wet and dry process cement plants, kettle and kiln gypsum set-ups and board plants. Engineering degree not required providing experience and know-how satisfactory. Salary commensurate with background and experience. All replies treated confidentially. Give complete personal data, age, education, experience, references and salary required.

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Executive type man to assume control of purchasing and expediting, also related duties, in growing sales organization catering to the aggregate industry. Knowledge of crushers, vibrators and related equipment desirable.

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2—Denver 30"x54".
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PENNA. THOR 8XT 12-48. Size 48x54.

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McLanahan 12" x 30' logwasher with V-belt drive.
27½ ton single compartment 8' x 12' bin.
60-ton, two compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.
18" diameter x 20" face magnetic pulley.

## SHOVELS AND CRANES

Lorain L-820, 2 yard diesel shovel-crane-drag. Reconditioned.
Osgood 903, 2 yard diesel, Cat. D17000.
Lorain TL-25-S wide gauge crawler hoe-crane.
Lorain Byers 83 diesel powered hoe.
Lorain TL-20 4 x 4 self-propelled crane. Excellent.
Lorain TL-20 6 x 4 Moto-Crane. Reconditioned.
Lima 34 Paymaster ¼ yard diesel shovel. Good condition.
Michigan C-16, ½ yard gas shovel.
Unit 1014 truck crane, 6 x 4 carrier.

## TRACTORS, TRUCKS, SCRAPERS, ETC.

3—Euclid rear dumps, 22-ton. Good condition.
3—Cat DW10 scraps. Good condition.
2—Cat DW15 scrapers. Excellent condition.
1—Allis-Chalm. HD19 crawler, blade.
1—Allis-Chalmers HD10 with Baker bulldozer.
2—International TD18 with Bucyrus-Erie bulldozer blade.
1—International TD9 with front shovel attachment. Reconditioned.
1—Woolridge 15-18 yard Model TCR scraper. Rebuilt.

## DIESEL POWER UNITS

Cat D7700, 63 H.P. @ 1000 RPM. Rebuilt.
Cat D13000, 6 cylinder diesel engine, Twin-Disc clutch, extended shafts, outboard bearing, 145 H.P. @ 1000 RPM. Rebuilt.
Cat D17000, 8 cylinder diesel complete with radiator and clutch.

## ASPHALT PLANT

Barber-Greene Model 848 with drier, gradation unit, etc.

## AIR COMPRESSORS

600 cu. ft. Gardner-Denver diesel. Recond.
500 cu. ft. Ingersoll-Rand Waukesha. Recond.
500 cu. ft. Gardner-Denver diesel port. Rblt.
676 cu. ft. Type 10 Ingersoll-Rand two stage stationary.
420 cu. ft. Gardner-Denver two stage stationary. Rebuilt.

**L. B. SMITH, INC.**
**CAMP HILL, PA.**
**Phone Harrisburg REgent 7-3431**

---

## FOR SALE

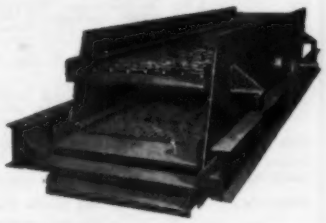
One UNIVERSAL ENGINEERING CORPORATION Model 546 Scalping Primary Unit with 4' x 8' 2 deck Simplicity Screen #24S—D—803; 20x36 Jaw Crusher, S/N 115x39; 2—24" Side Delivery Conveyors, 36" Front Delivery Conveyor; Powered by GM Model 6031-C Diesel Engine; On 8—8.25 x 20 Pneumatic Tires; Equalizer Air Brakes. Unit equipped for fifth wheel. Excellent Condition.
One UNIVERSAL ENGINEERING CORPORATION Model TDS-30 Secondary Basic Plant, S/N 512x7, 300 Series, 2½ Deck 4' x 12' Simplicity Screen, Model TDS-30 Size 30" Twin dual Roll; Dust and Chip Delivery Conveyors; 25" Reciprocating Plate Feeder with Clutch and Charging Hopper; Powered by GM-62400 Power Unit; On 8—8.25 x 20 Pneumatic Tires. Air Brakes on 4 Rear Wheels. Unit equipped for fifth wheel. Excellent Condition.
One Dual Tired Dolly with fifth wheel for moving crushers in pit.
One Used Bay City Model 45 Standard Shovel Front, 19 foot Boom, 14 foot Handle with ¾ Yard Bucket. Hardly Used. Excellent Condition.
One Used Three Cubic Yard PMCO Shovel Bucket with Bail. Good Condition.
One Unused Manganese Front PMCO Part Number 614-A for 3 Cubic Yard Shovel Bucket.

**ZENITH DREDGE COMPANY**
**Waterfront at 13th Ave. West**
**Duluth 2, Minnesota**
**Howard T. Hagen Randolph 7-1561**

# BONDED EQUIPMENT BARGAINS

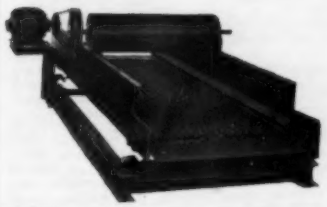
IMMEDIATE SHIPMENT FROM OUR FACTORY — WRITE, WIRE OR PHONE

## NEW BONDED® HEAVY DUTY VIBRATING SCREENS



| Model Number | Screening Area | No. of Decks | Sale Price |
|---|---|---|---|
| 124AS | 2' x 4' | 1 | $355 |
| 224AS | 2' x 4' | 2 | 375 |
| 126AS | 2' x 6' | 1 | 375 |
| 226AS | 2' x 6' | 2 | 395 |
| 136AS | 3' x 6' | 1 | 495 |
| 236AS | 3' x 6' | 2 | 585 |
| 336AS | 3' x 6' | 3 | 815 |
| 138AS | 3' x 8' | 1 | 575 |
| 238AS | 3' x 8' | 2 | 695 |
| 338AS | 3' x 8' | 3 | 845 |
| 138BS | 3' x 8' | 1 | 1110 |
| 238BS | 3' x 8' | 2 | 1165 |
| 338BS | 3' x 8' | 3 | 1250 |
| 248BS | 4' x 8' | 2 | 1695 |
| 348BS | 4' x 8' | 3 | 1850 |
| 2410BS | 4' x 10' | 2 | 1775 |
| 3410BS | 4' x 10' | 3 | 2095 |
| 3412BS | 4' x 12' | 3 | 2395 |

## NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. HEAVY DUTY MODELS, TYPE BS: 4-bearing positive throw, eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. GENERAL DUTY SCREENS, TYPE AS: eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for new 8-page Bulletins 1086 and 1087.

VISIT THE BONDED FACTORY ANY TIME

## NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

| Belt Width | Length of Conveyor | List Price | Sale Price |
|---|---|---|---|
| 14" | 25' | $1166 | $ 672 |
| 14" | 50' | 2016 | 1064 |
| 14" | 85' | 3206 | 1612 |
| 16" | 20' | 1083 | 592 |
| 16" | 45' | 1928 | 1012 |
| 16" | 60' | 2494 | 1264 |
| 16" | 90' | 3529 | 1767 |
| 18" | 25' | 1327 | 739 |
| 18" | 45' | 1986 | 1085 |
| 18" | 70' | 2886 | 1533 |
| 18" | 85' | 3466 | 1798 |
| 18" | 100' | 4001 | 2065 |
| 18" | 130' | 5081 | 2602 |
| 20" | 25' | 1366 | 770 |
| 20" | 60' | 2762 | 1426 |
| 20" | 75' | 3322 | 1710 |
| 20" | 90' | 3959 | 1995 |
| 24" | 25' | 1428 | 835 |
| 24" | 45' | 2227 | 1237 |
| 24" | 70' | 3226 | 1744 |
| 24" | 100' | 4425 | 2339 |
| 24" | 120' | 5225 | 2744 |
| 24" | 150' | 6426 | 3352 |
| 30" | 50' | 2669 | 1504 |
| 30" | 70' | 3576 | 1971 |
| 30" | 90' | 4483 | 2432 |
| 36" | 25' | 1632 | 1040 |
| 36" | 45' | 2492 | 1561 |
| 36" | 60' | 3327 | 1950 |
| 36" | 100' | 5102 | 2990 |

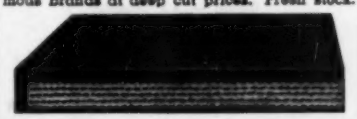
For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

| | | |
|---|---|---|
| For 14" belt | $15.66 | per foot |
| For 16" belt | 16.78 | per foot |
| For 18" belt | 17.90 | per foot |
| For 20" belt | 18.95 | per foot |
| For 24" belt | 20.68 | per foot |
| For 30" belt | 23.02 | per foot |
| For 36" belt | 26.00 | per foot |

Write For Bulletin #1138

## NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck ⅛" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



| Width | List Price | Sale Price |
|---|---|---|
| 14" | $3.43 foot | $2.75 foot |
| 16" | 3.86 foot | 2.88 foot |
| 18" | 4.27 foot | 3.19 foot |
| 20" | 4.69 foot | 3.69 foot |
| 24" | 5.55 foot | 4.14 foot |
| 30" | 6.77 foot | 5.06 foot |
| 36" | 8.01 foot | 6.00 foot |

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting or 24# to 33# average friction pull, 1960# to 2300# average cover tensile belting. These belts are for more severe services, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

| | | | |
|---|---|---|---|
| 16" | 4 | $4.59 foot | $3.36 foot |
| 18" | 4 | 5.09 foot | 3.72 foot |
| 20" | 4 | 5.57 foot | 4.03 foot |
| 24" | .. | 6.56 foot | 4.80 foot |
| 30" | 4 | 8.05 foot | 5.89 foot |
| 24" | 5 | 7.68 foot | 5.61 foot |

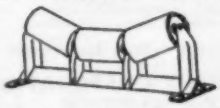
Additional widths and plies available at low prices. Write for Free Sample.

## NEW BONDED ® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded ® Troughing Idler Conveyors, thus eliminating the necessity of two motors. Capacities to 225 tons per hour. Full information in Bulletin 1140. Write for it.

Priced from ..... $232.00

## NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



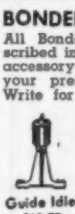
| 3-roll, 5" diameter Troughing Idlers for: | | | |
|---|---|---|---|
| 14" belt | $17.25 | 24" belt | $19.75 |
| 16" belt | 18.00 | 30" belt | 20.50 |
| 18" belt | 19.00 | 36" belt | 21.25 |
| 20" belt | 19.25 | 48" belt | 23.75 |

| 1-roll, 5" diameter Return Idlers for: | | | |
|---|---|---|---|
| 14" belt | $6.75 | 24" belt | $ 8.00 |
| 16" belt | 7.00 | 30" belt | 8.75 |
| 18" belt | 7.50 | 36" belt | 9.25 |
| 20" belt | 7.75 | 48" belt | 10.75 |

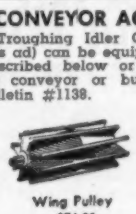
All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings. Maintenance is negligible. Write for bulletin # 1138.

## BONDED CONVEYOR ACCESSORIES

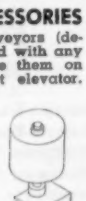
All Bonded Troughing Idler Conveyors (described in this ad) can be equipped with any accessory described below or use them on your present conveyor or bucket elevator. Write for Bulletin #1138.



Guide Idler $13.75



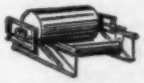
Wing Pulley $74.00



Return Belt Guide Idler $11.25

Holdback $90.00

Self-Aligning Idler $56.50



Head & Tail $135.00

Roll Idler

## BONDED SCALE AND MACHINE COMPANY

PHONE: HIckory 4-2186 Days; PHONE: AX minster 1-2213, Evenings

WRITE FOR FREE CATALOG AND PRICES

110 Bellview — Mfgrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders — Columbus 7, Ohio

## EQUIPMENT CORPORATION OF AMERICA

**QUALITY ECA REBUILTS FOR SALE OR RENT**

**AIR SPECIALS**

2—500 cu. ft. Ingersoll-Rand portable compressors, pneumatic tires, gas driven. Good condition ..... $3500.00 each

2—500 cu. ft. Ingersoll-Rand portable compressors, diesel driven, 4 pneu. tires ..... $4500.00 each

1—315 cu. ft. Worthington portable compressor, pneu. tires, gas engine, Excellent condition ..... $2500.00

1—315 cu. ft. Ingersoll-Rand portable compressor, steel wheels, gas engine, good condition ..... $995.00

1—160 cu. ft. Gardner-Denver portable compressor, steel wheels, gas engine, good condition ..... $850.00

**CRANE**

1—P & H Crawler Crane, Model 255-A, serial #8243. In excellent condition. Your inspection invited. Located in our Pittsburgh Rebuilding Plant ..... $6,750.00

**DERRICKS**

2—Ingram 4-ton all steel stiffleg derricks, complete with 50' boom. Capacity 4-ton @ 28' radius. Perfect condition.

3—12x28 Climax Jaw Crushers

1—10x20 Champion Jaw Crusher

1—Set 16"x10" Sturtevant Rolls

1—3' x 5' Link-Belt Shake-out Screen

**Write for new Stock List No. 456**

**EQUIPMENT CORPORATION OF AMERICA**

PITTSBURGH 30, PA. Box P-933 FEderal 1-2900
CLIFTON HEIGHTS, PA. Box P-906 (Sub. of Phila.) MAdison 6-2200
CHICAGO 4, ILL. 327-P S. LaSalle St. WAbash 2-4661
NEW YORK 7, N. Y. 30-P Church St. WOrth 2-0036

## MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

**EXPERT REPAIR SERVICE**

**NUSSBAUM ELECTRIC CO.**

220 E. Douglas Avenue — Fort Wayne, Ind.

## FOR SALE BY OWNER

1 Model 1520 New Holland Impact Breaker, completely overhauled — excellent condition.

**GLENN A. COMSTOCK**

P. O. Box 172 — Bay City, Mich.
Phone 2-1714

## AIR COMPRESSOR

GARDNER-DENVER 686 ft. displacement, complete with 125 h.p. F.M. 440 3 ph. 60. elec. motor. on steel skids and with 500 gal air receiver.

**ARROW CONTRACTORS**

**4646 S. Kedzie Ave.**

**Chicago 32, Ill.**

**FRontier 6-6500**

**FOR SALE OR RENT—EASY TERMS**

Rebuilt — A-1 Condition

48B Bucyrus Erie Shovel 2 cy Diesel
Northwest Model 6 Shovel, 1½ c.y.
Caterpillar D8 Bulldozer

**WILLIAMS CONSTRUCTION COMPANY**

Box 145 Balto. 20, Md. — Murdock 6-0800

## FOR SALE

**TRANSIT MIXERS**

| | | |
|---|---|---|
| Jaeger | 3 Yd. | Hi-Discharge, (4¼ yd. Agitator) un-mounted, reconditioned. |
| Jaeger | 3 Yd. | Hi-Discharge, (4¼ yd. Agitator), mounted Int. "K-11" 6x6. Very clean. (2). |
| Jaeger | 2 Yd. | Hi-Discharge, (4¼ yd. Agitator) mounted Int. "LF170" Tandem. |
| Rex | 3 Yd. | Hi-Discharge, (4¼ yd. Agitator). un-mounted. |

**MISCELLANEOUS**

| | | |
|---|---|---|
| Link-Belt | "LS-85" | Reconditioned ¾ yd. Diesel Shovel. |
| Caterpillar | "D6" | Used Tractor w/Trackson Loader, cab, 1950 Model. |
| Gallon Unit | "116" | Used Diesel Motor Grader. Shovel Attachment complete, for Unit "514" ½ Yd. |
| Unit | "514" | Used ½ Yd. Trench Hoe or Dragline, gas power. Priced to sell quick. |
| Barber-Greene | "522" | Bucket Loader, pneumatic-tired. |
| Simplicity | 3 x 8 | New 3-Deck Screen—Sacrifice at our cost. |

**Note: Above equipment belongs to us. Located in our yard.**

**EIGHMY EQUIPMENT COMPANY**

120 S. Pierpont
Rockford, Illinois — Phone 4-6706

Gardner Denver Horizontal Air Compressor, two stage, 12½ x 8 x 8, Model HAB, s/n 94558, 500 cu. ft./min., 125 lbs. pressure, with Louis Allis Squirrel Cage Motor, 100 hp., 440V, s/n 601739. All attachments for operation. Condition good.

**Geo. W. Kerford Quarry Co.**

Atchison, Kansas — Phone 1206

## TRACTOR LOADER

EIMCO MODEL 104 LOADER mounted on a CAT. D4 Tractor, 13" flat tracks, steel canopy top, elec. starter, 4 elec. lights. EIMCO overhead loader bucket, capacity 1 cu. yd. Rebuilt and guaranteed. Ideal tool for tunnel and mining work. Cost new approx. $15,000.00. This machine used less than 1,000 hours.

**A REAL BUY AT $10,500.00**

**Wire or phone collect CYpress 2-4800**

**H. O. PENN MACHINERY CO. Inc.**

140th Street & East River
Bronx 54, N. Y.

## DEPENDABLE USED MACHINES

Special:—Pioneer port. Diesel gravel plant with 10x24 jaw and 24x16 roll crushers:

| | | |
|---|---|---|
| 9x36 jaw crusher | Pioneer secondary crushing plant | P&H 255A dragline |
| 16x16 roll crusher | B-G #358 hopper car unloader | Austin Badger shovel |
| Eagle cinder crusher | Lima ¾ yd. Diesel dragline | Insley K-12 dragline |
| 40' bucket elevator | B-G #839 port. asphalt plant | Lessman loader |
| Cletrac DGH with bucket | Bay City ½ yd. Diesel dragline | 3000 lb. frost ball |

These machines reconditioned in our newly built daylight plant. Come see them!

**10030 Southwest Highway — TRACTOR & EQUIPMENT CO. — Oak Lawn, Ill.**

## FOR SALE
## EUCLID REAR DUMP TRUCKS

**Bucyrus-Erie** Draglines, 2½ yd. to 8 yd.
**Bucyrus-Erie** Shovels, ¾ yd. to 8 yd.
**Northwest** Draglines, ¾ yd. to 2½ yd.
**Northwest** Shovels, ¾ yd. to 2½ yd.
**Manitowoc** Draglines, 2½ yd. to 5 yd.
**Manitowoc** Shovels, 2½ yd. to 5 yd.
**Marion** Shovels & Drags, 4 yd. to 9 yd.
**Lima** Shovels & Drags, 1½ yd. to 6 yd.
**Osgood Shovels** & Drags, 1½ yd. to 2½ yd.
**Caterpillar Graders & Dozers.**
**Hi-Lift Shovels.**
**P&H Truck Mtd.** Crane & Hoe, ⅝ yd.
**2400 Lima** Shovel front attachment.
**4500 Manitowoc** Shovel front attachment.
**6" and 9" Drills.** Diesel and Electric

***other equipment available not listed above.***

**WILLIAM LUBRECHT, III**
**Construction Equipment**

311 W. Diamond Ave. - Hazleton, Pa.
Phone: Gladstone 5-4041 or 5-0253

## FOR SALE

1—605 1¼ yard Kobering Shovel Ser C6075
1—K-370 GM 671 1¾ yard Link Belt Shovel Ser 2834 Cat 13000
1—25 x 40 Cedar Rapids Jaw Crusher
1—10' x 42" Cedar Rapids Feeder
2—Kobering Dumptors

**McCARTHY, JONES & WOODARD**
723 Argyle Avenue • Nashville 2, Tenn.

## NEW 25 NORTHWEST BACKHOE

Never Used
Price—$22,000

## 38-B BUCYRUS ERIE

Shovel or Crane
1½ Yd.—Used 3,640 Hrs.
Price—$42,000

**FRANK SWABB EQUIPMENT CO.**

313 Hazleton National Bank Bldg.
Hazleton, Pa. — GLadstone 5-3658

## FOR SALE

Farrell-Bacon 13x48 Jaw Crusher. Machine in new condition. With or without power. Machine may be seen in operation.

**GALLO ASPHALT CO.**

1000 Springfield Ave. • Irvington, N. J.
Phone Essex 3-0055

## FOR SALE

One 48" x 10' Universal Revolving Scrubber complete with Drive and 15 hp. Motor. New in 1955. Bargain—$1,800.00.

**PUTNAM-HAWLEY BUILDING MATERIALS, INC.**

Potsdam, New York — Phone 9494

## FOR SALE

4—Euclid Rear Dumps Model 27FD, Serials #4929, 4930, 4931, 5191, with Cummins Diesel engines. Completely rebuilt, rubber excellent.
1—Barber Greene Bucket Loader Model 82A with new Buda Engine, A-1 condition
1—Complete 54B Dragline Attachment, 85' Boom, Lagging, Fairleads, 2½ yd. Drag Bucket
1—Set of Fairleads to fit 54B
1—45' Crane Boom for Bay City Model 65
2—Lorain 82 Shovel Attachments for Hy Fronts
10,000 Feet of 1⅛" Wire Rope, unused, on reels 6 x 37 HC regular lay ..... 25c per foot
1—Gallon Model 101 Road Grader, Diesel Engine, All Hydraulic controls—A-1 ..... $3,250.00
1—Rome Grader model 403, Diesel Engine, Hydraulic controls—like new ..... $3,250.00
1—Bucyrus-Erie 54B shovel-Dragline Combination, New Buda Diesel Engine.
1—Cat D-6 Cable Dozer, with DD Power Unit. Used only 906 hours

***All equipment can be inspected in our yards at Cleveland, Ohio.***

**Call or write** — **BE-2-5151**

**TESTA BROS., INC.**

RD #3, RICHMOND ROAD — BEDFORD, OHIO

## FOR SALE

3 10" McCully Gyratory Crushers
2 Traylor No. 412 Type TZ Gyratory Crushers
2 Traylor 8" Gyratory Crushers
1 New RCA Metal Detector 10" x 36" aperture
6 Used single deck Robins Gyrex Screens with bases
5 Used single deck Robins Vibrex Screens
1 Used Cameron Pump, size 10", 2400 G.P.M., 125" head, 1150 R.P.M., Left Hand, Serial No. 57537
1 Used Cameron pump, size 10", 2400 R.P.M., 125" head, 1150 R.P.M., Right Hand, Serial No. 57535
1 New Edison Voice Writer (Dictaphone)
1 Marion Model 490, Serial No. 6261, Ward Leonard Control. Also spare parts. In addition, we have a substation 2300/440 Volt with three 150 KVA Transformers.
1 20" Traylor Heavy Duty Finishing Crusher
4 Allis Chalmers Gates "D" Crushers, Size 6
1 Traylor Rolls Crusher—30" x 72"
*1 Fuller Kinyon System
*1 Allis Chalmers Compeb Mill
1 Gill Horizontal Bit Dresser
1 1-Ton Cummer Black Top Plant
*1 Covered Steel Barge, suitable for carrying cement
*1 Covered Wooden Barge, suitable for carrying cement
1 Thew Lorain 60 Shovel
1 Used Verifax Printer Type I
* Available after January 1, 1957.

*Apply to:*

**New York Trap Rock Corp.**
**230 Park Avenue - New York 17, New York**
**Telephone: Murray Hill 9-8500**

## FOR SALE

Allis Chalmers 8K Gyratory Crusher complete with 100 HP electric motor and compensator.

*Write or wire collect*

**PETE LIEN & SONS QUARRY**
**RAPID CITY, SOUTH DAKOTA**

Modern Sand and Gravel, Excavating, Grading Business
$100,000.00 volume; net profit 20%
Will sell intact and complete
Up-to-Date Equipment
Excellent Pit Reserves
Fifty Square Mile Territory
Year Round Working Conditions
Eighteen Years in Service

*For complete details write or wire:*

## L. C. SMITH

**519 S. East Street** **Dothan, Alabama**
**Phone 3-2500**

**FOR SALE**

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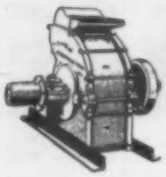

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1—4½'x40' Kiln, 8'x125'

**DRYERS**
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12"x24" Jaw Crushers
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6'x12', 5½'x10', 8'x6' Ball Mills
2—5'x16'; 1—5½'x10'; 1—4'x11' Rod Mills
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Buda Diesel, Industrial power unit. Model 6-DC-844. Serial No. 38240. 150 hp. @ 1400 R.P.M. Completely rebuilt. 450 gal. 3 compartment tank.

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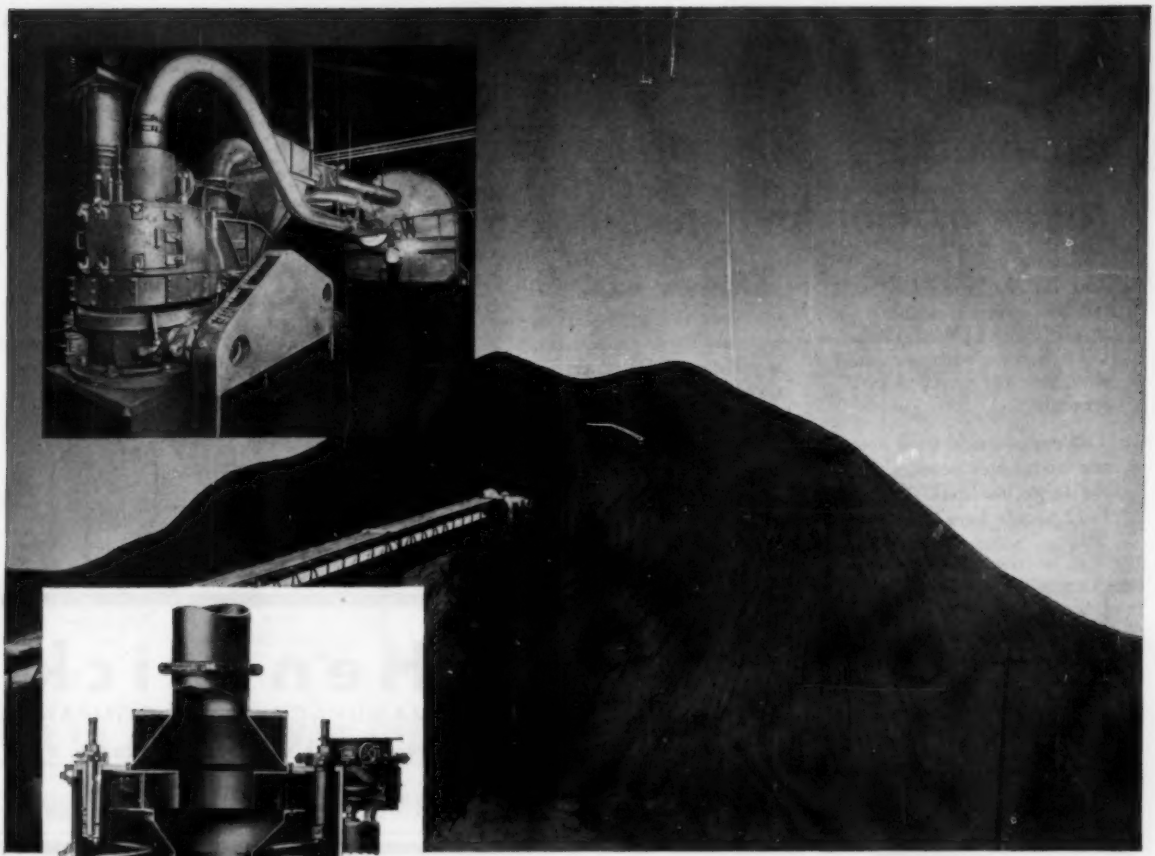

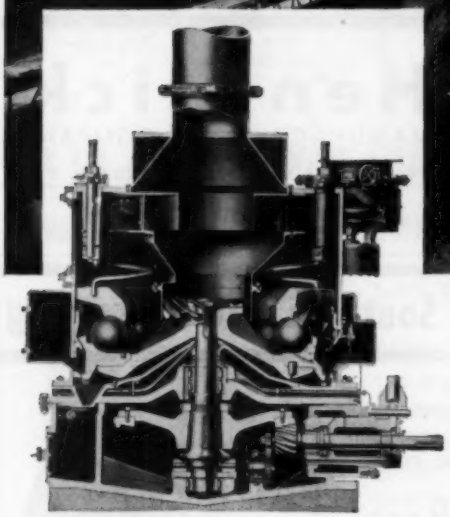

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C-212

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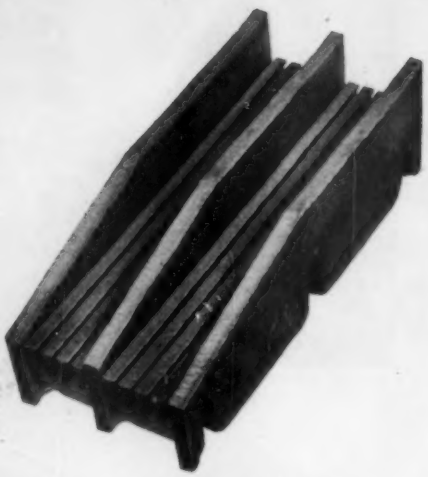

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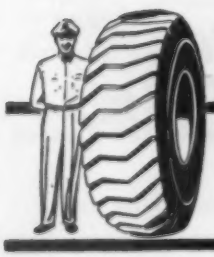

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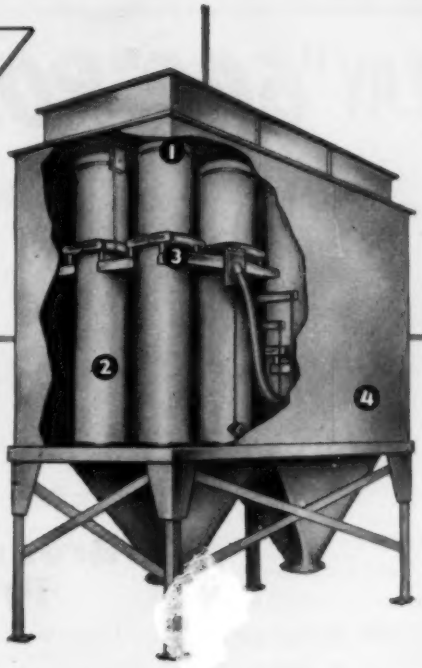
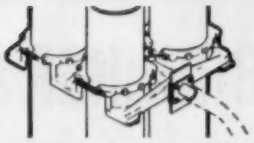
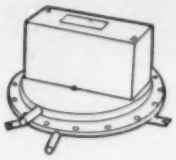
**1** Air enters plenum casing at top of Series 12 Aeroturn for equal distribution to all filter bags. Bags are of felt . . . with higher filtering efficiency than woven material. Tiny pores hold even submicronsized dust particles. Cloth area is less than ¼ that of shaker bags.



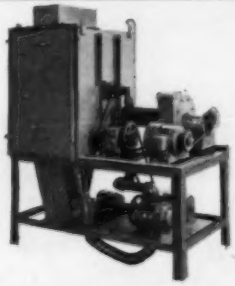
**3** Self-adjusting blow rings* travel length of filter bag exterior . . . discharge reverse-air-jet into bag which blows accumulated dust off bag walls. Cleaning never interferes with filtering . . . which maintains peak efficiency. Aeroturn remains on the job continuously.

**2** The air travels downward through the filter bags, assists delivery of dust into hoppers below . . . escapes through bag walls. Even distribution of dust puts every square inch of the filtering surface to work . . . avoids clogging . . . permits air to escape easily.



**4** Automatic pressure switch* controls blow ring operation. Above normal pressure loss automatically actuates blow rings. When pressure loss normalizes, blow rings stop operation. Self-cleaning occurs as often or as little as needed . . . avoids over-cleaning.

# Up to 75% Lower Installation Costs—99.9%+ Efficiency with KOPPERS Series 12 Aeroturn Dust Collectors!



Factory-assembled and test-operated, Koppers Model D Aeroturn Dust Collector combines features of Series 12 with unusual compactness. Capacities range from 500 to 4,800 CFM.

### 50% Lower Maintenance Costs . . . Up to 50% Less Space!

Aeroturn's remarkably high filtering efficiency slashes your plant and machinery maintenance costs further than can any other dust collector. Heating and cooling costs tumble because air can be recirculated . . . cleaner than outside air. Employee and community relations are improved. Yet Koppers Series 12 Aeroturn costs you less to install . . . less to maintain. Space requirements are far smaller.

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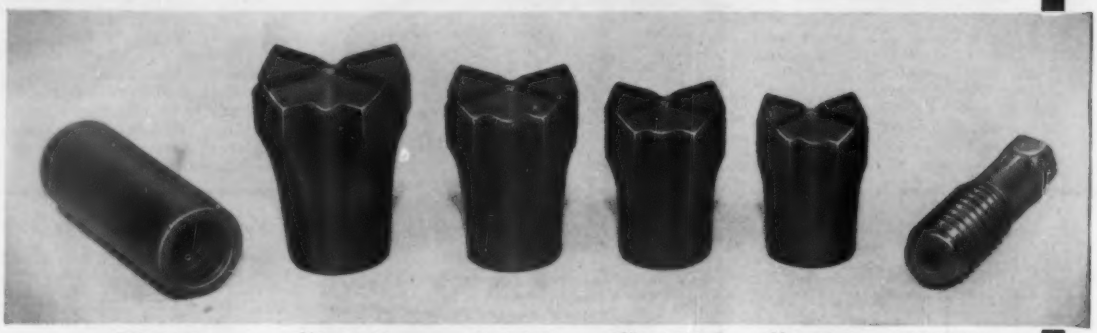

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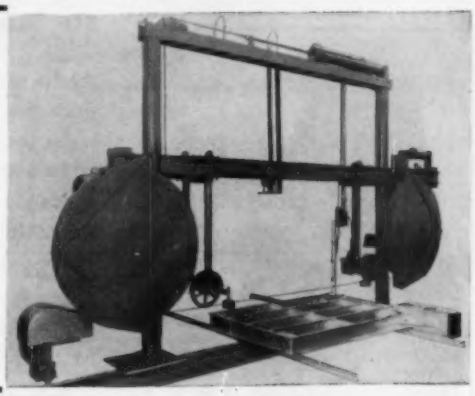

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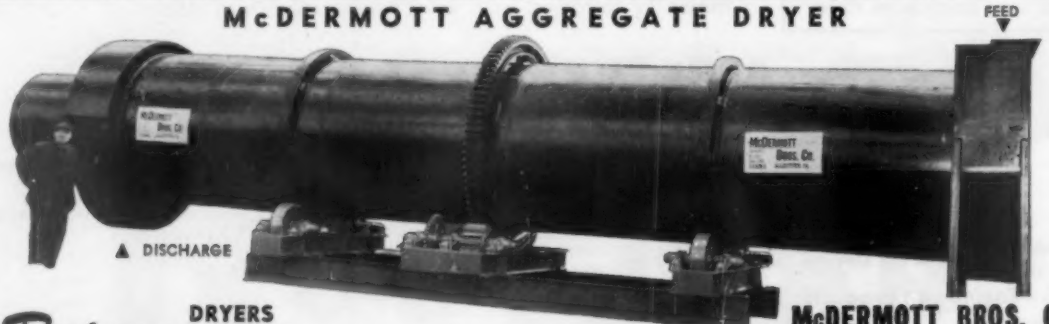


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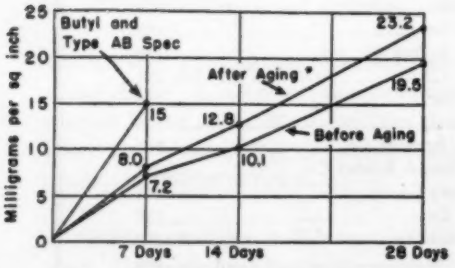


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**New Engineering Bulletin EB-27** has full details on performance of Type AB insulation in 15 Industry Specifications tests. Ask the Man from Anaconda for your copy as well as information about Anaconda Aerial Cable. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

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*See also Detailed Information in 1955 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

The 201-E is a highly portable plant. The frame is extra strong to hold rigid alignment of all equipment and drives. A rocker beam with full width axles supports most plant weight. Four wheels, each with dual tires, oscillate separately to compensate for rough terrain.

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THIS compact mill system combines in *one* simultaneous process the functions of several different units. The result is a streamlined operation that saves floor space, simplifies plant layout, avoids rehandling materials and speeds up production.

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*Raymond Division*

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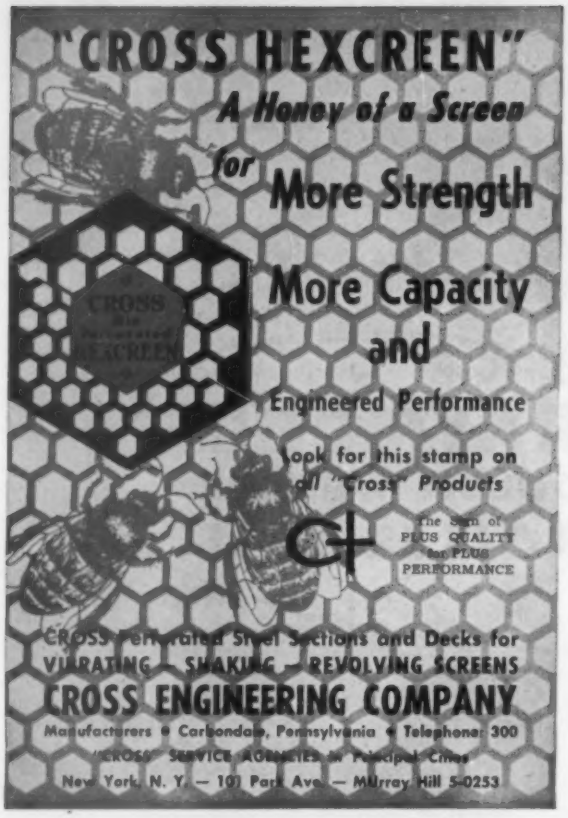

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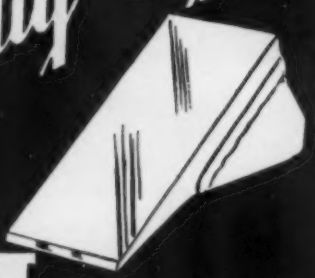

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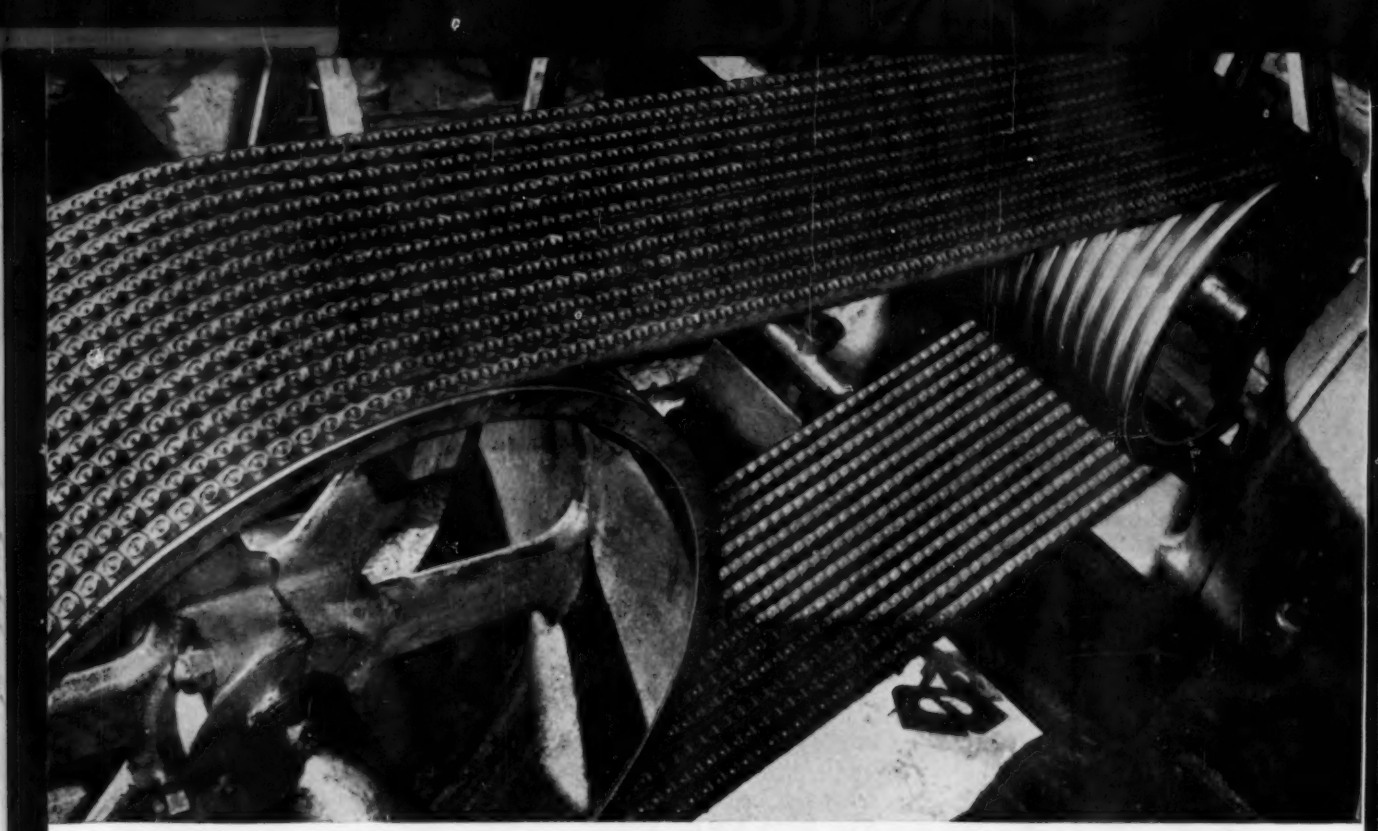

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**Adjustable to any length • Adaptable to any drive • Balanced power • Constant power • Vibrationless power**

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## ELIMINATE *Costly* SCREEN BLINDNESS

**PUT ON THE HEAT FOR GREATER TONNAGE**

- **EASILY ADAPTED** quick change assemblies assure fast screen changes, save valuable man hours.
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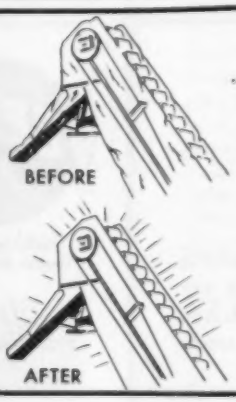


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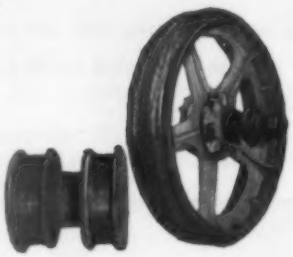

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**Rollers and Idlers**

. . . plus handling other shop work; sure proof of high performance and reliability.

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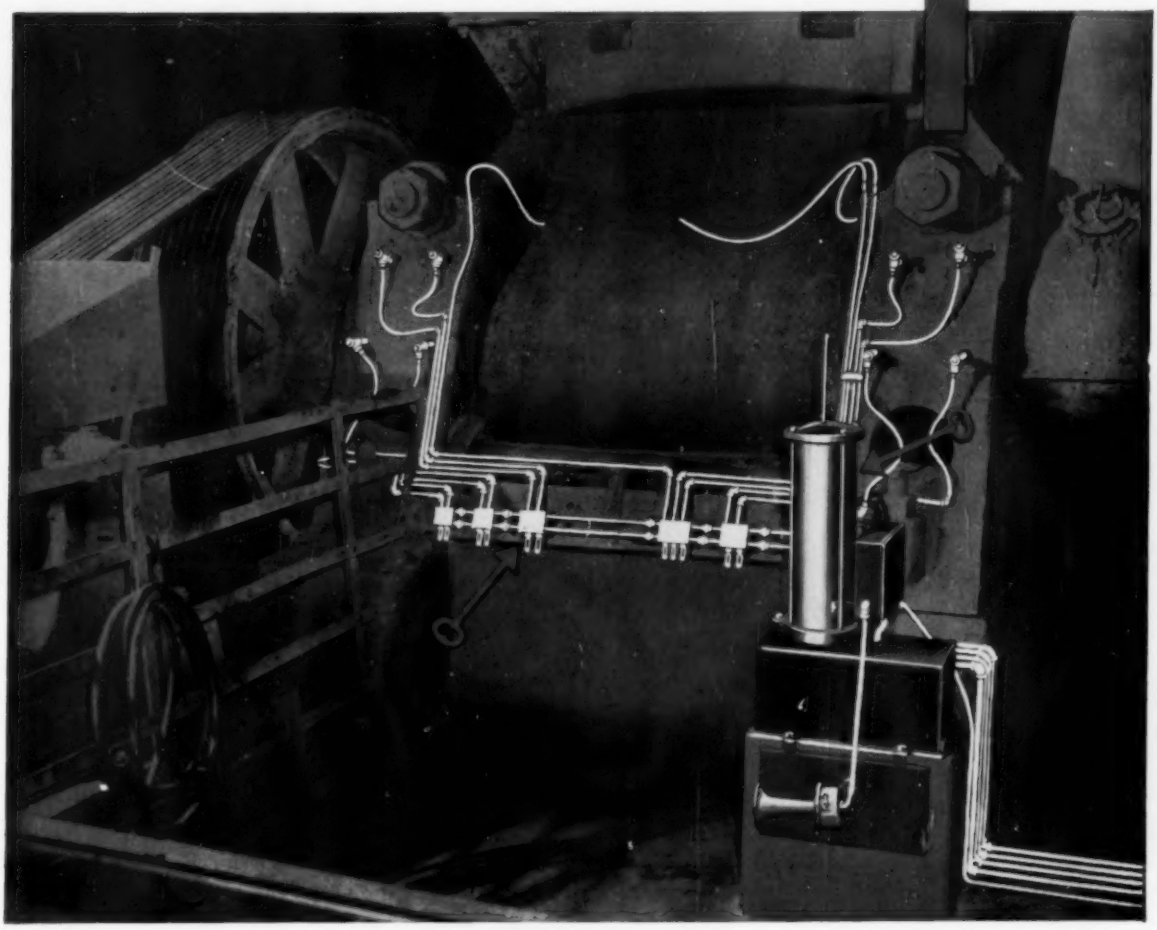
# Crusher bearings lasted 13 months, but with Farval no new ones in 6½ years

FARVAL—
*Studies in Centralized Lubrication*
No. 188



● Back in 1949, an automatic system of Farval Centralized Lubrication was installed on this Fairmount Crusher. It paid for itself in 4 months by the savings in lubricant and labor that resulted.

In the nearly 7 years of its operation, Farval has returned rich dividends. Before the system was installed the life of a set of bearings was only 13 months. Today the identical bearings installed when the lubrication system was applied are still in service. Maintenance cost has been negligible. This success record led the cement company to specify Farval for a new mill crane and a power shovel.

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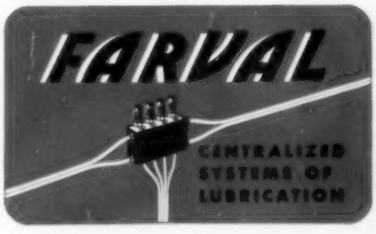
**On this crusher in an eastern cement plant, savings in lubricant and labor, due to Farval, run well over $375 a month.**



**NEW, MULTI-PURPOSE MARFAK** – For those who want a multi-purpose lubricant, *Texaco Marfak Heavy Duty Special 2* is the new lithium-base grease that can be used for chassis, wheel bearings, water pumps and other bearing lubrication.

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